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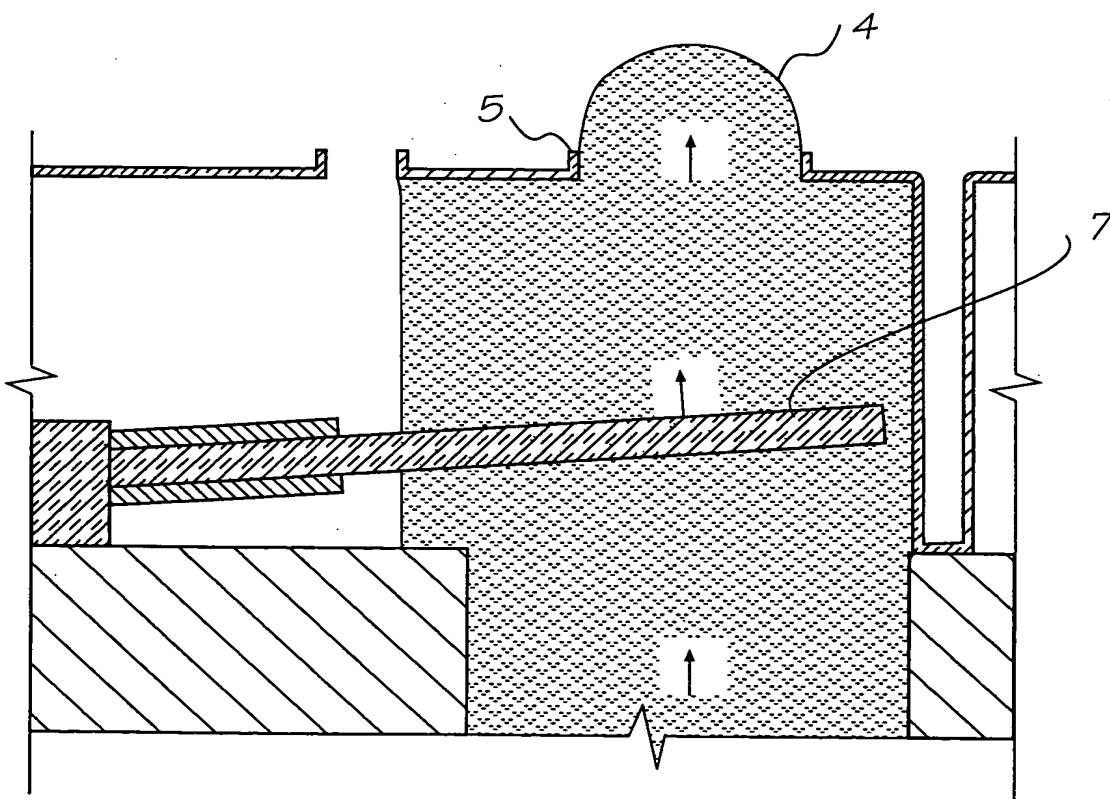
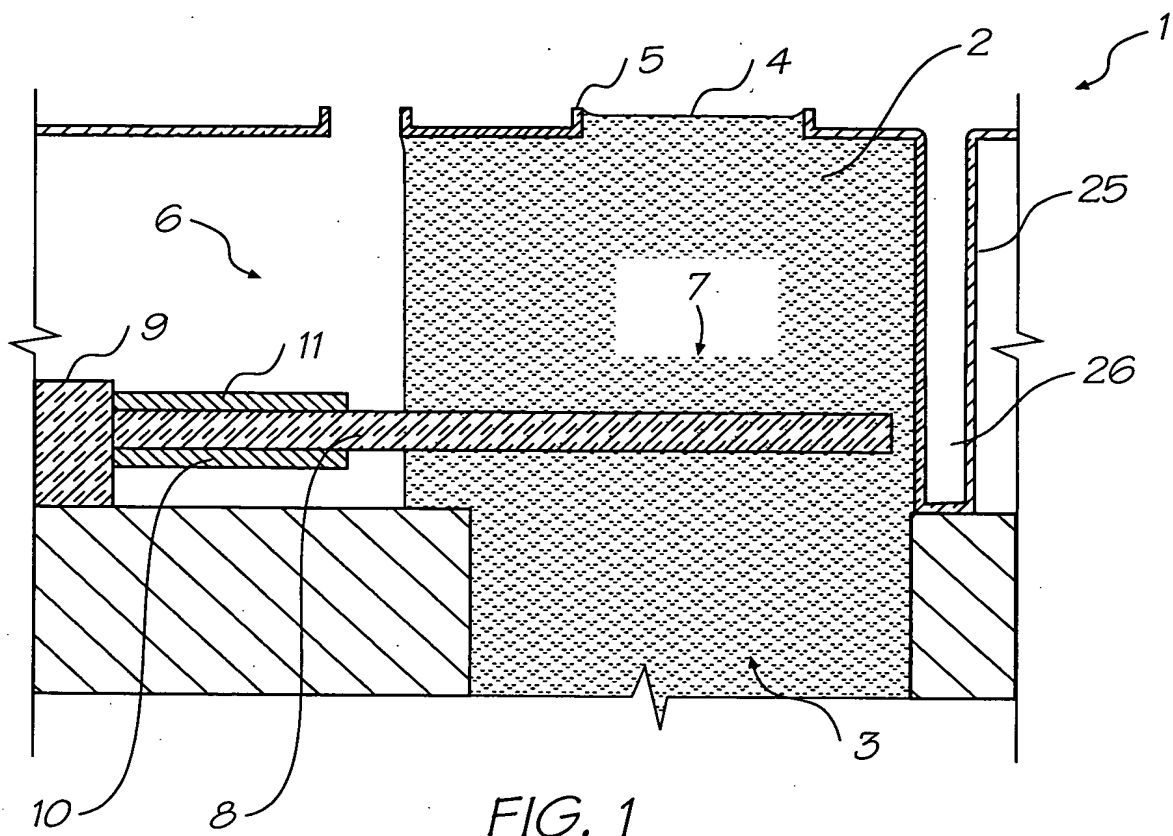
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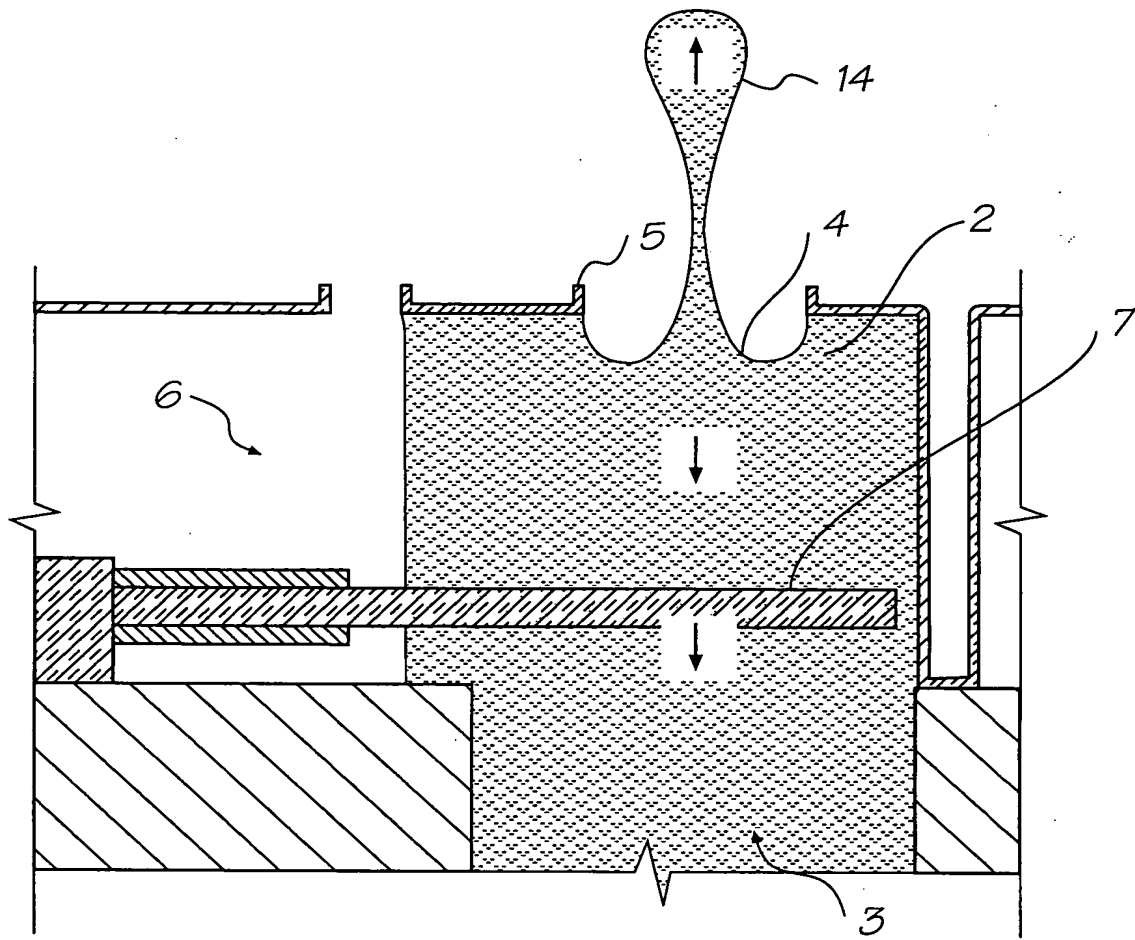


FIG. 3

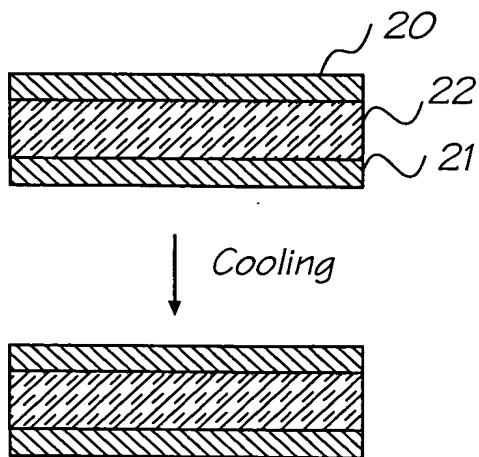


FIG. 4

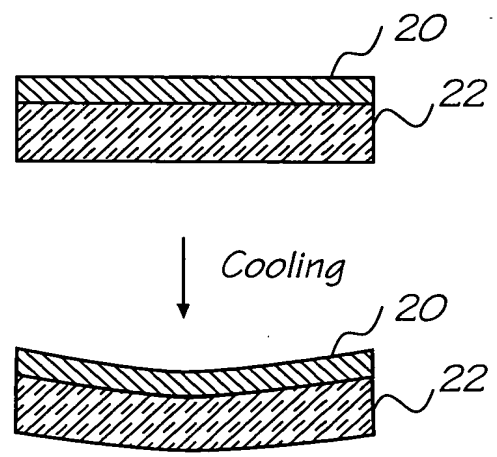


FIG. 5

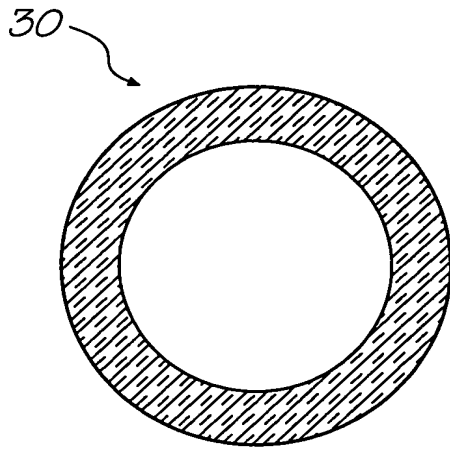


FIG. 6

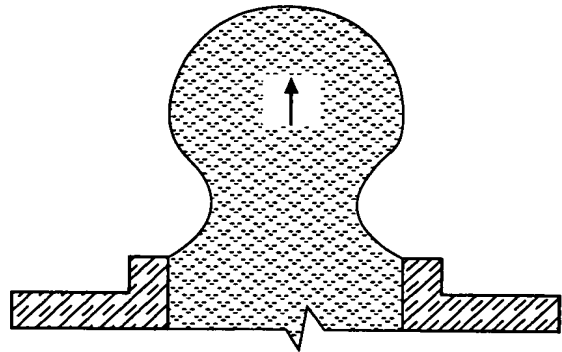


FIG. 7

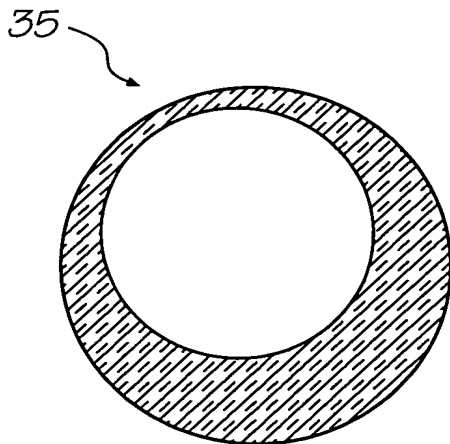


FIG. 8

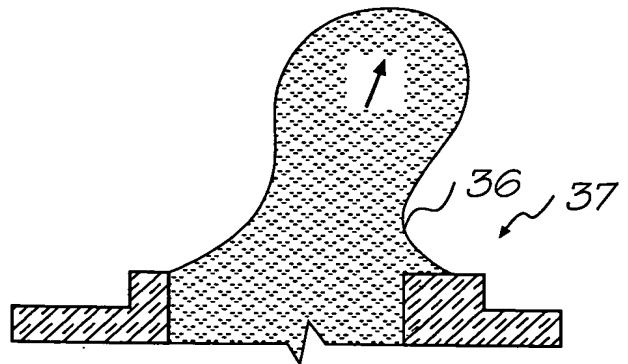


FIG. 9

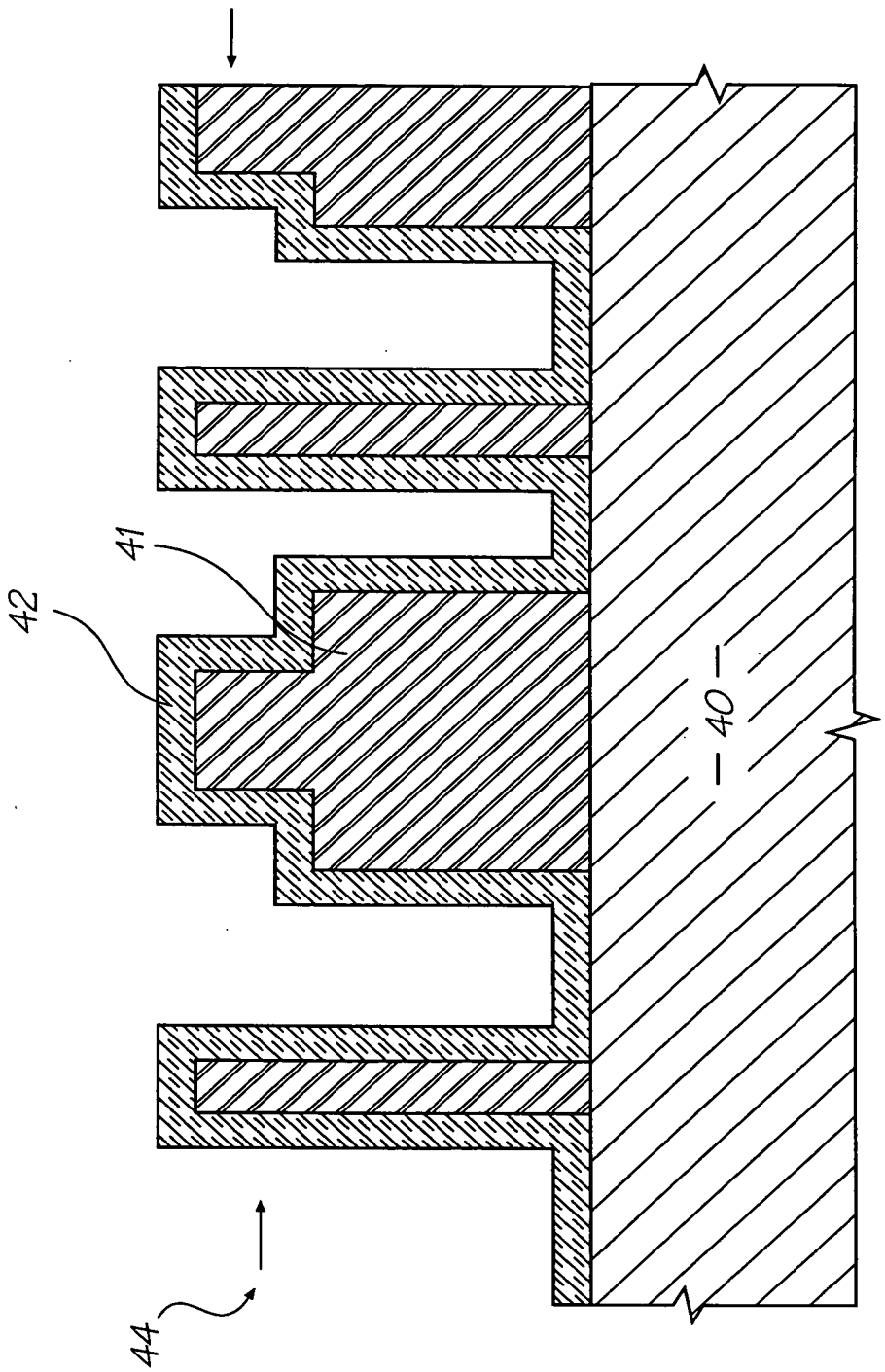


FIG. 10

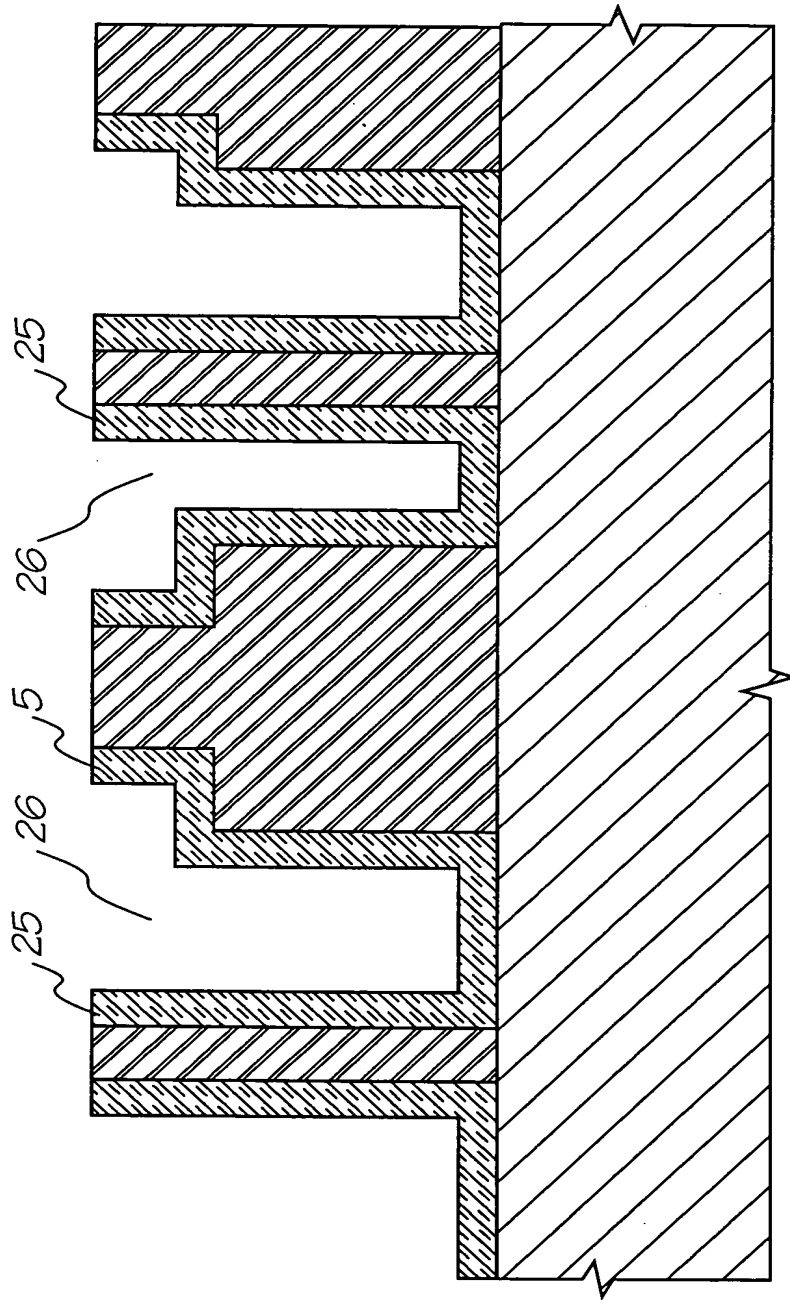


FIG. 11

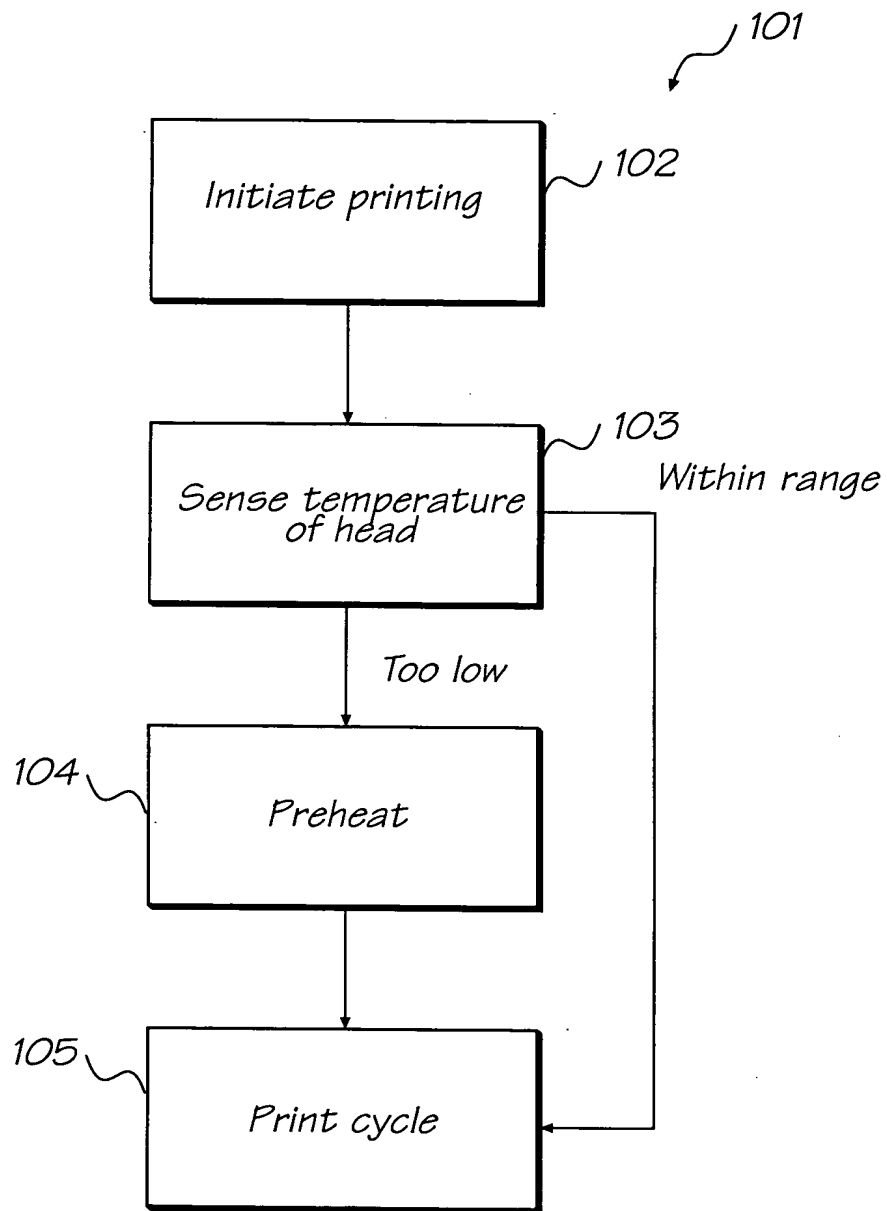


FIG. 12

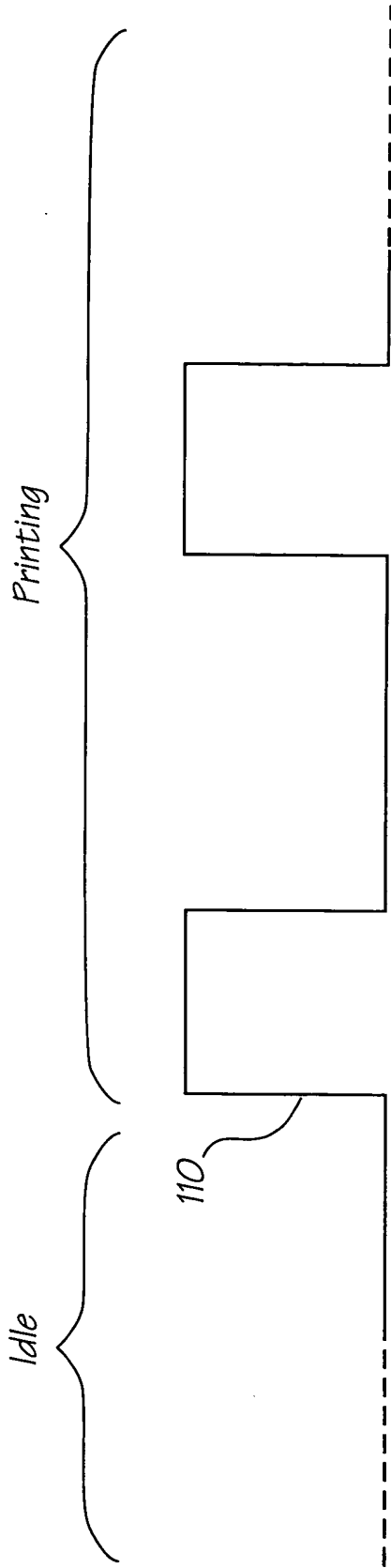


FIG. 13

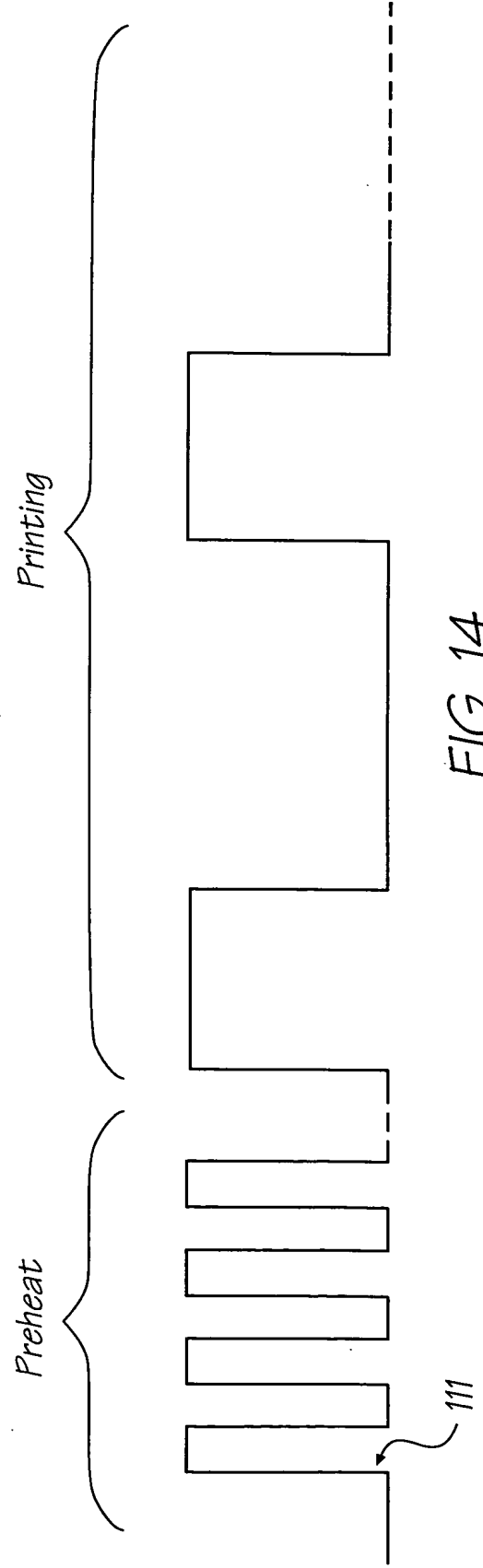


FIG. 14



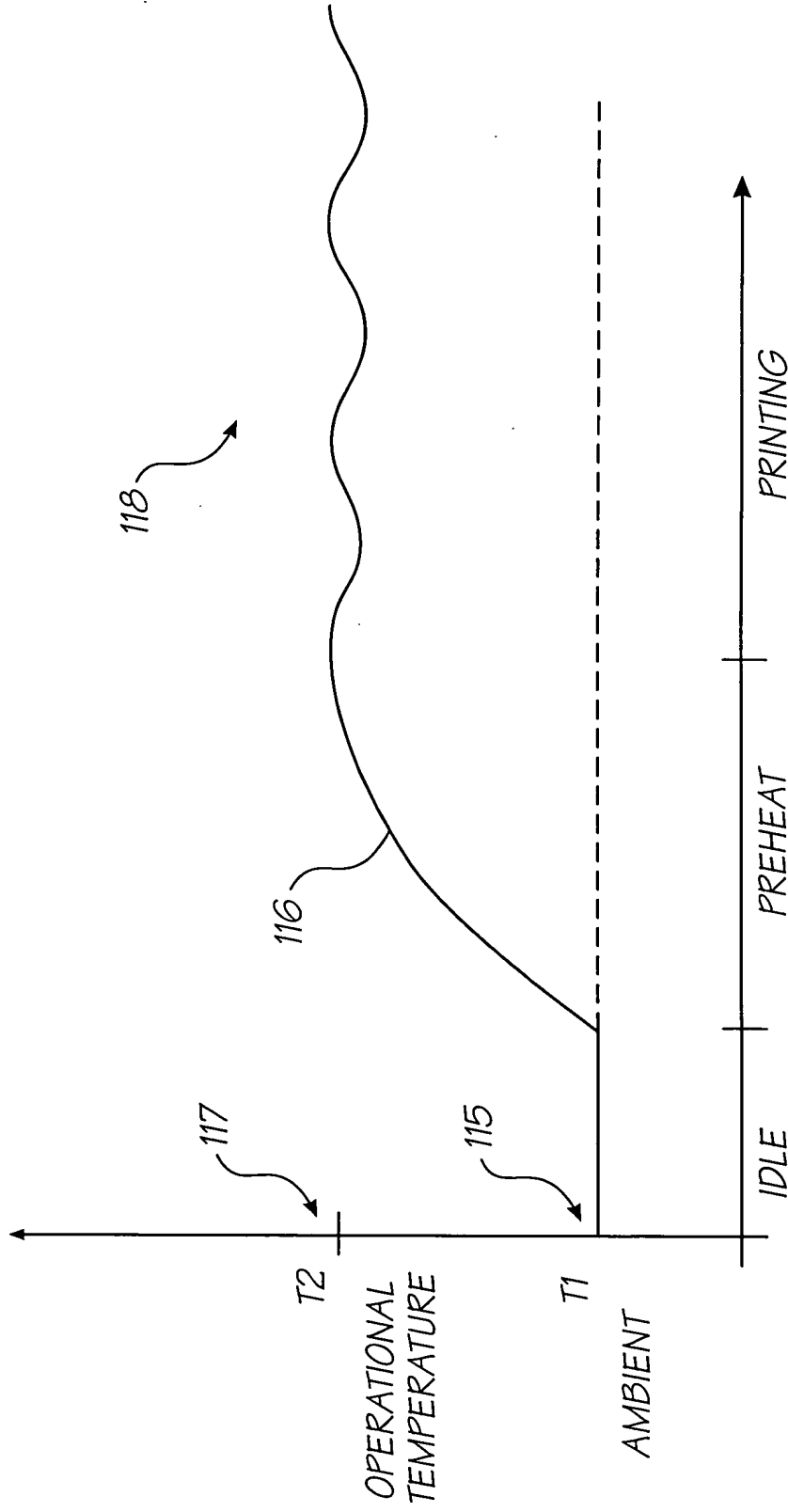


FIG. 15

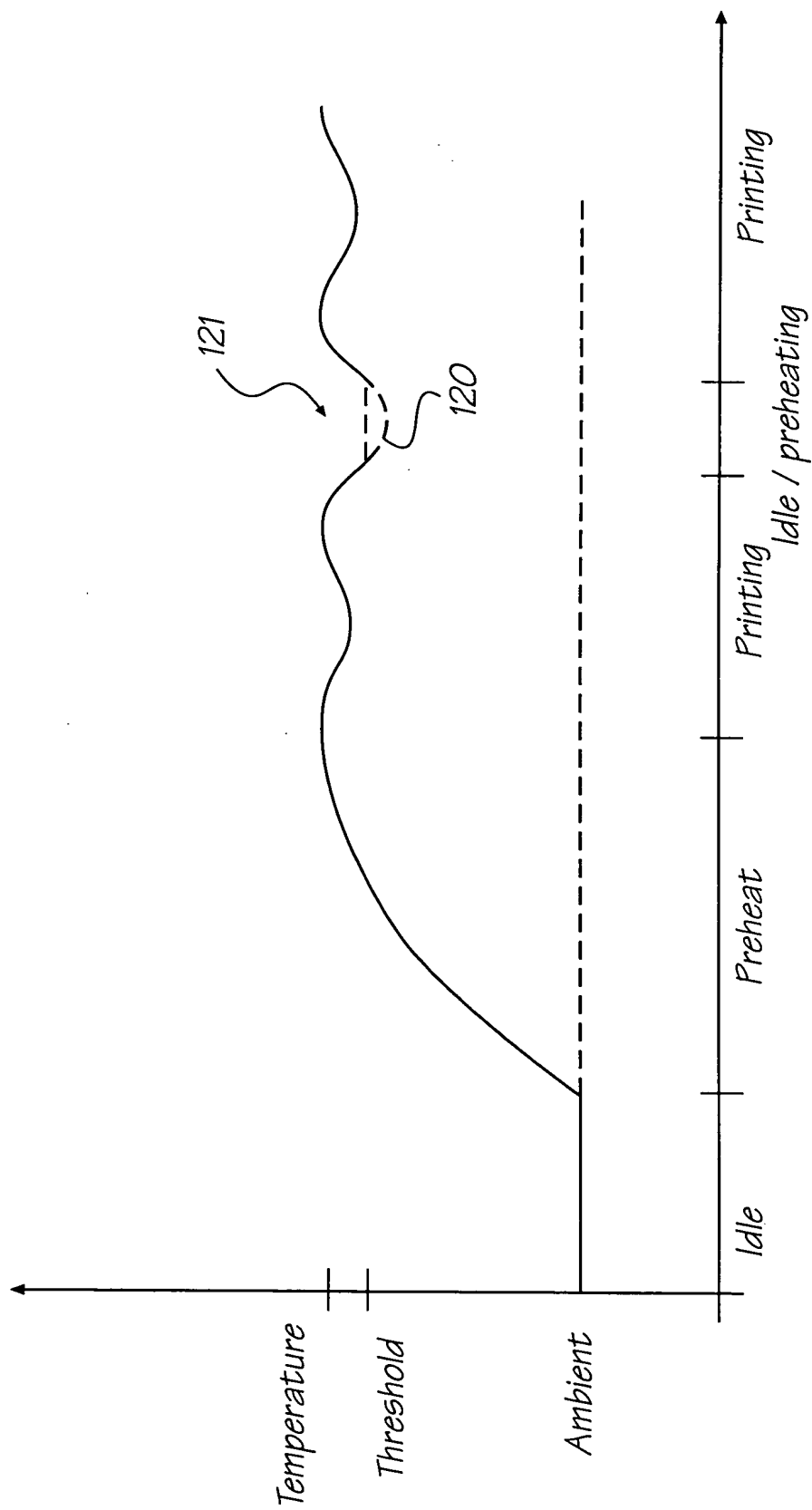


FIG. 16

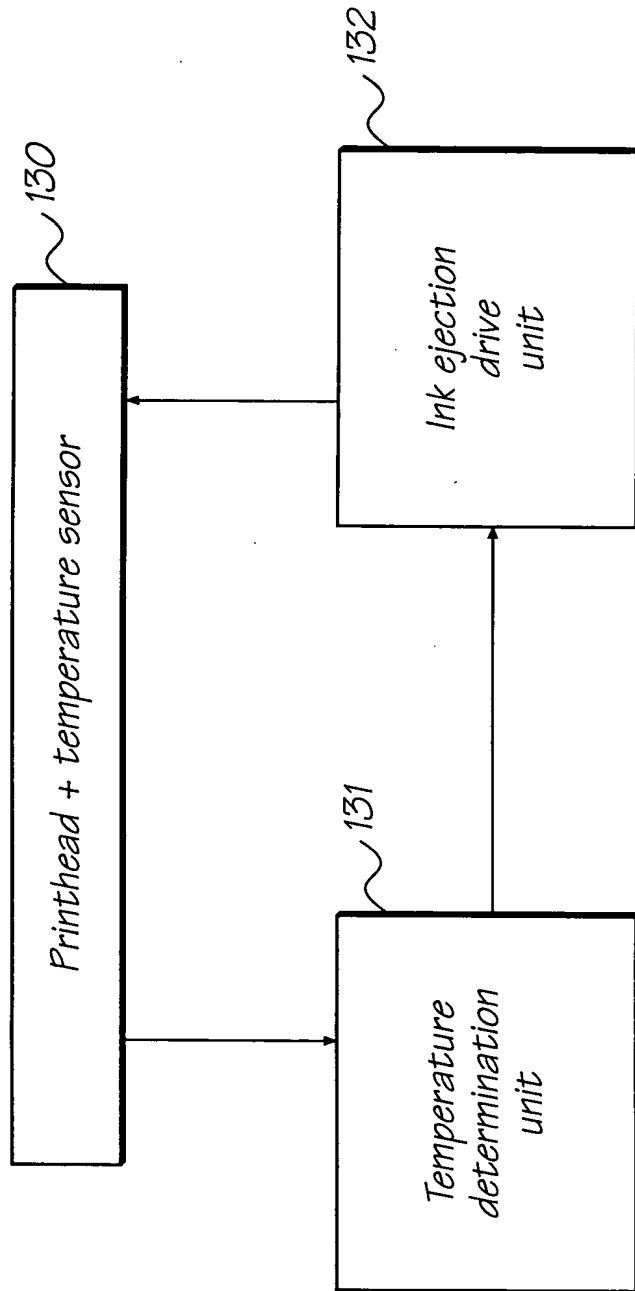


FIG. 17

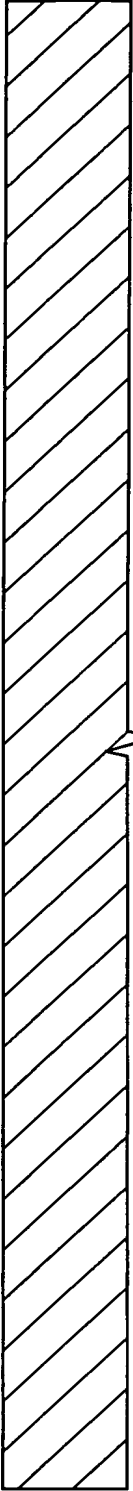
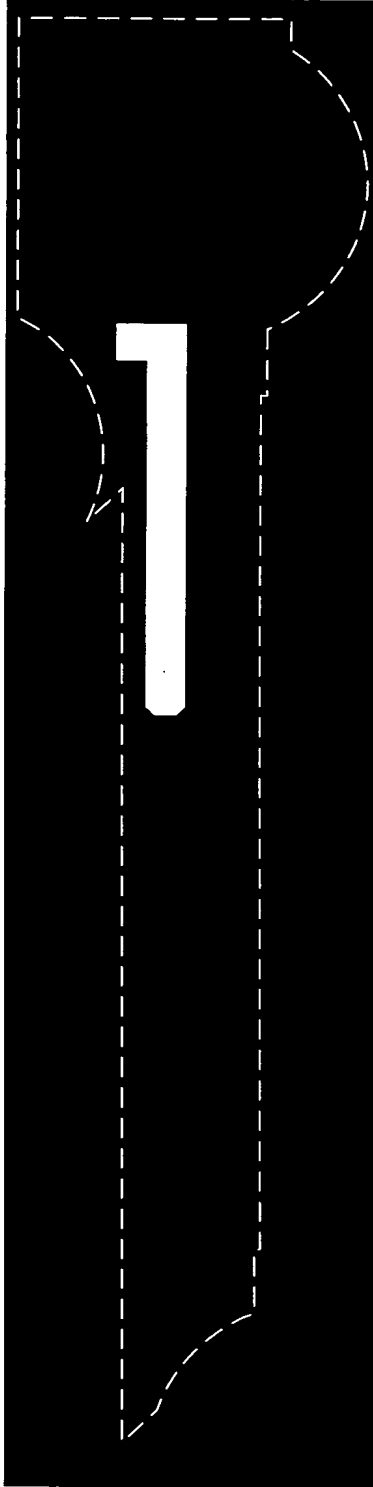
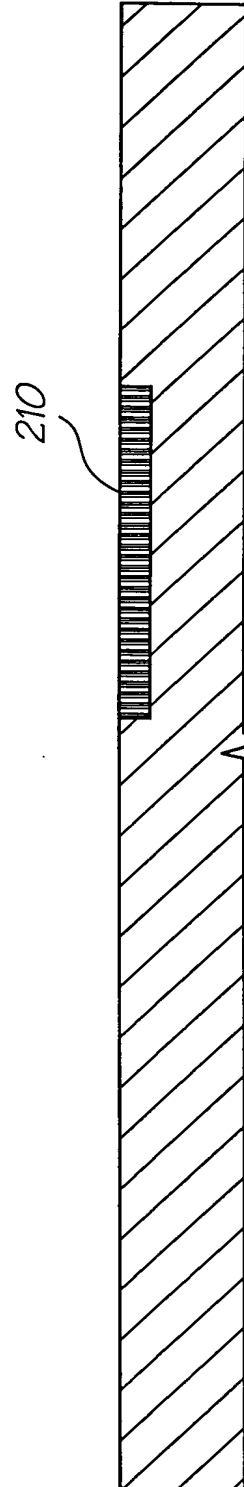


FIG. 18



N-Well mask

FIG. 19



Implant N-Well

FIG. 20

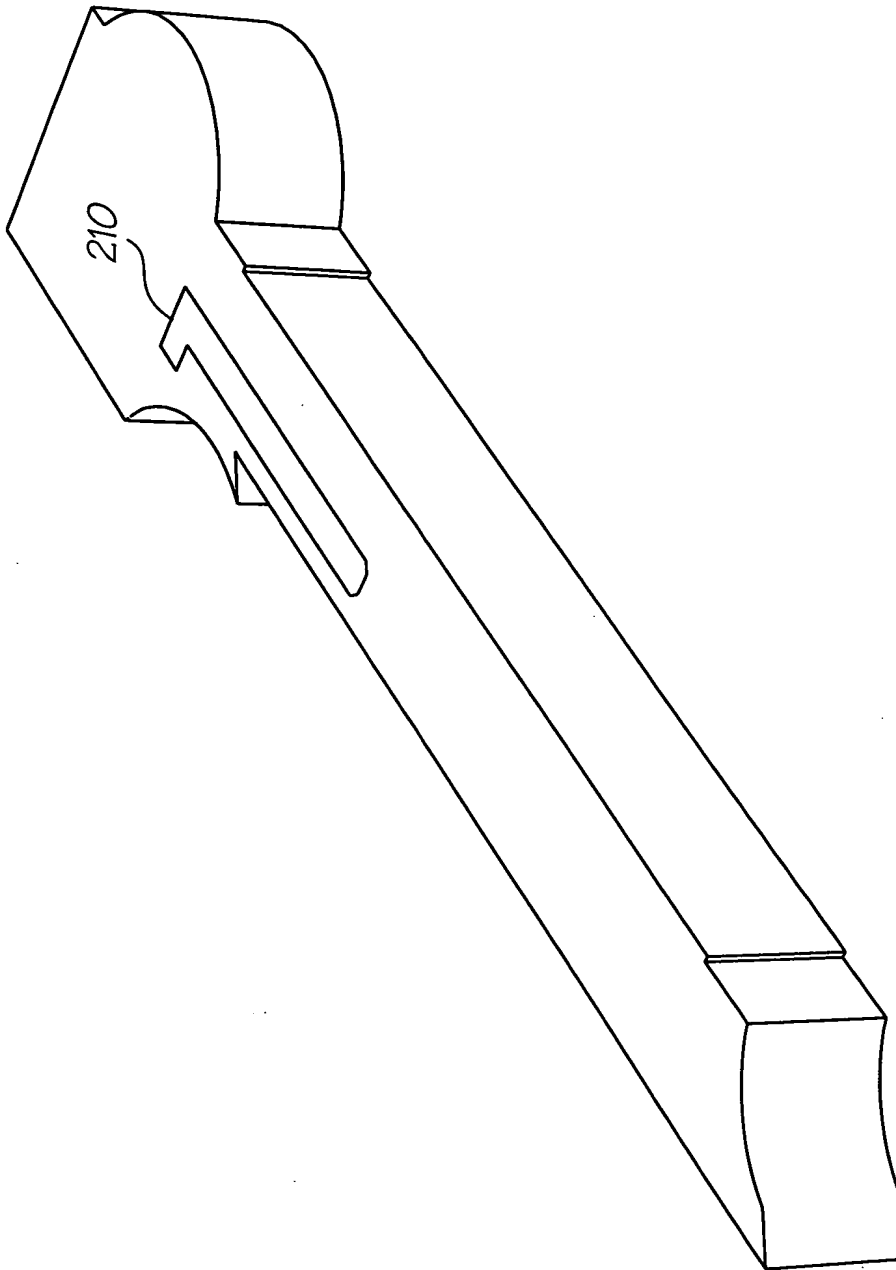
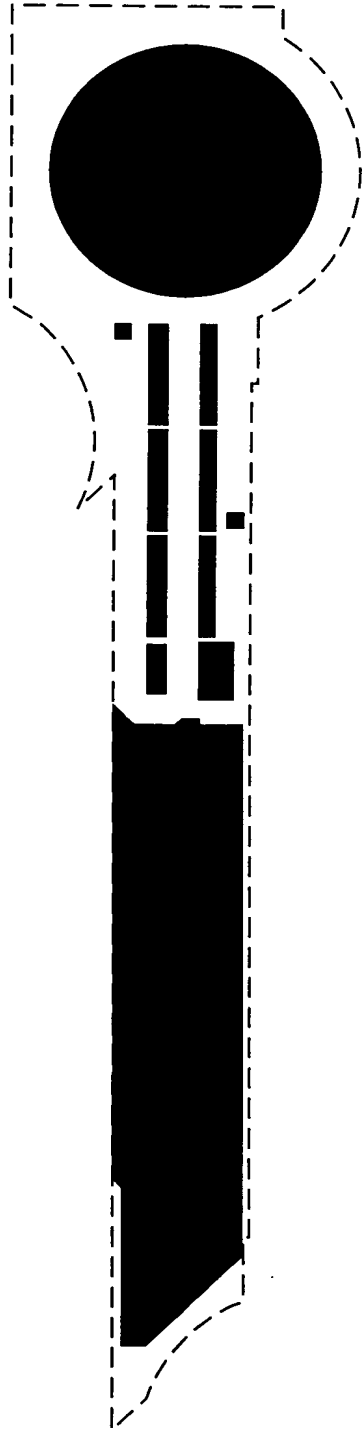
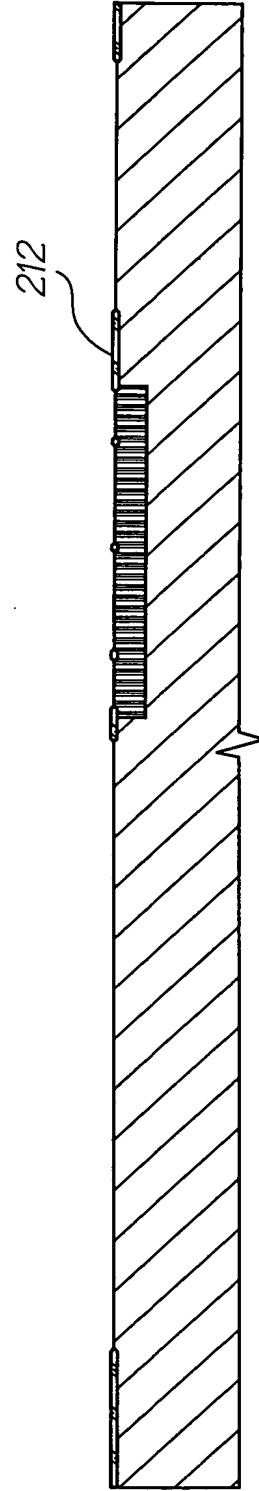


FIG. 21



Active mask

FIG. 22



Grow field oxide

FIG. 23

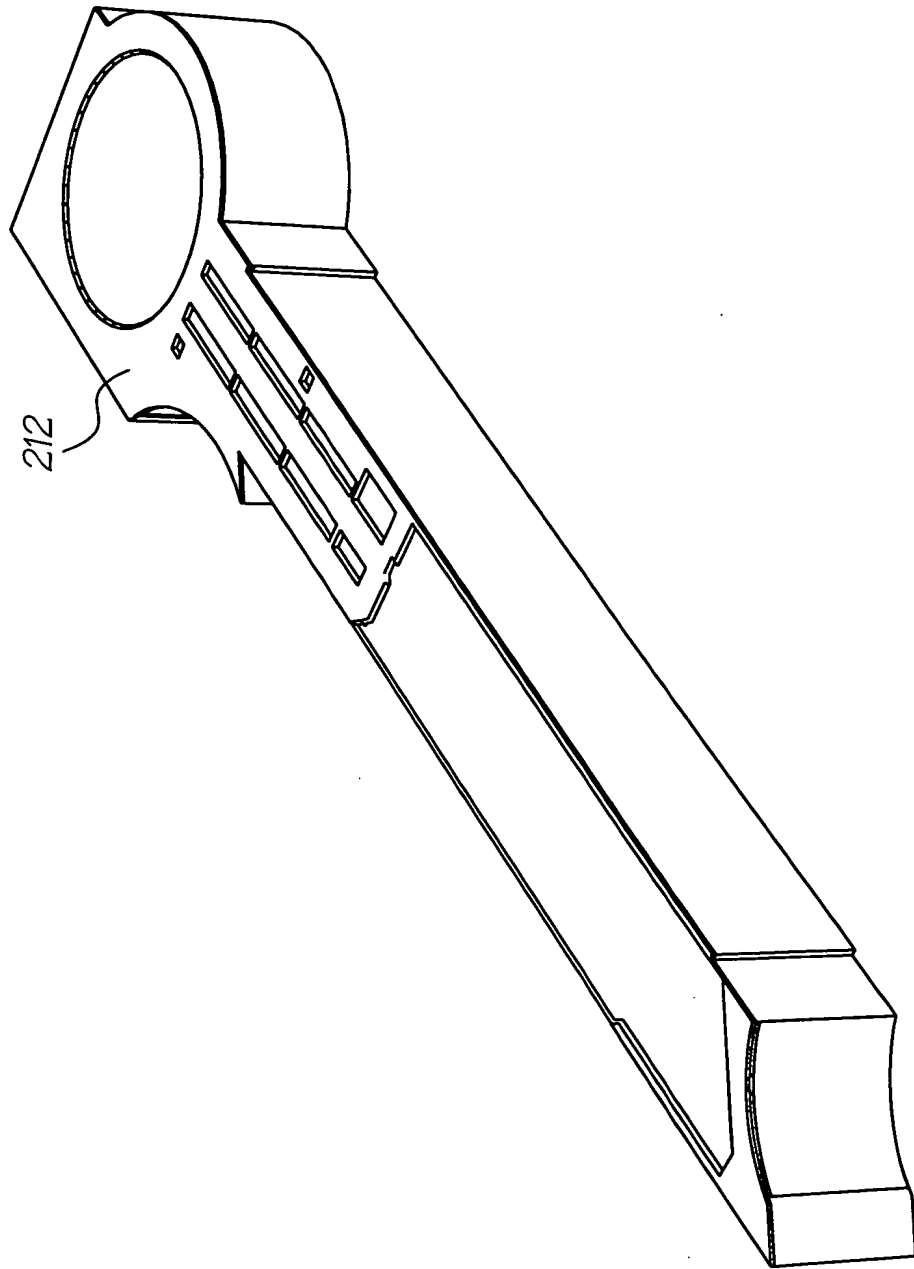
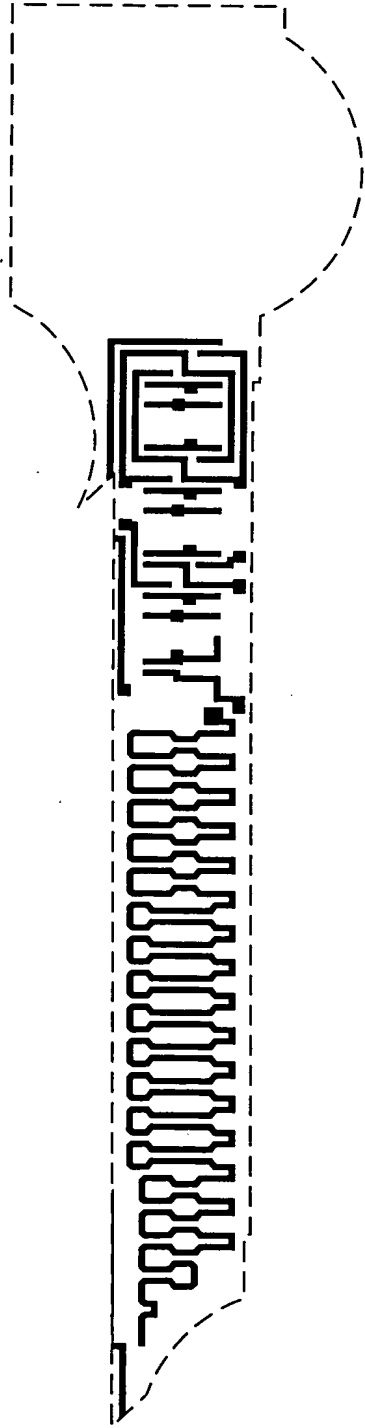
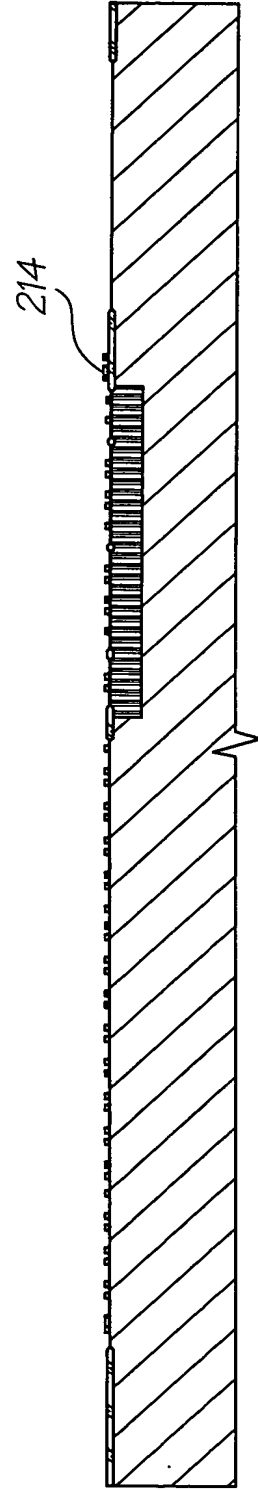


FIG. 24



*Poly mask*

*FIG. 25*



*Deposit poly*

*FIG. 26*



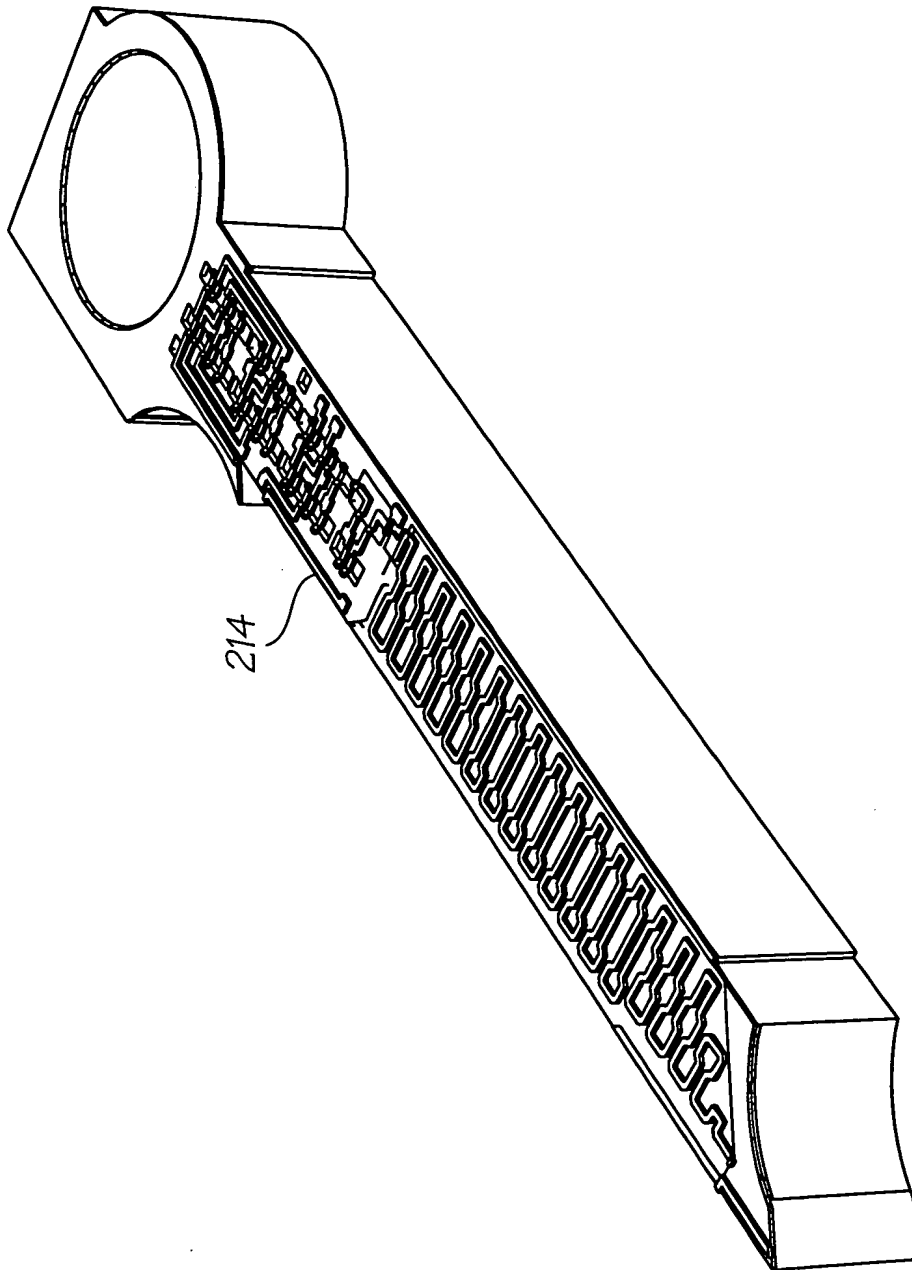
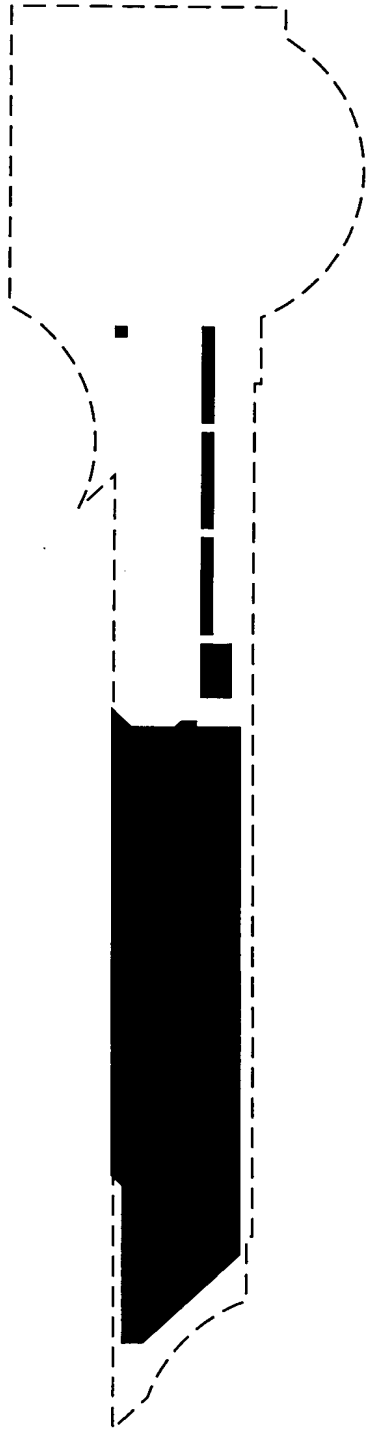
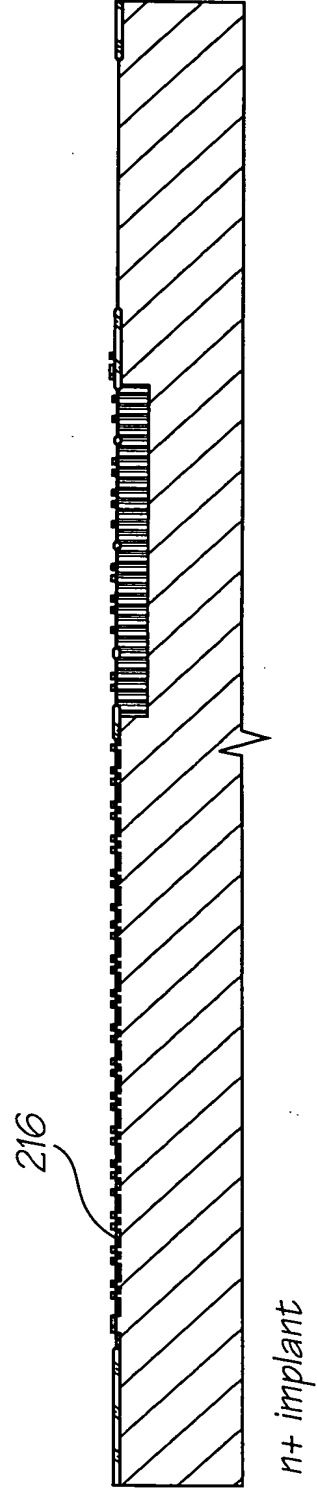


FIG. 27



*n+ mask*

FIG. 28



*n+ implant*

FIG. 29

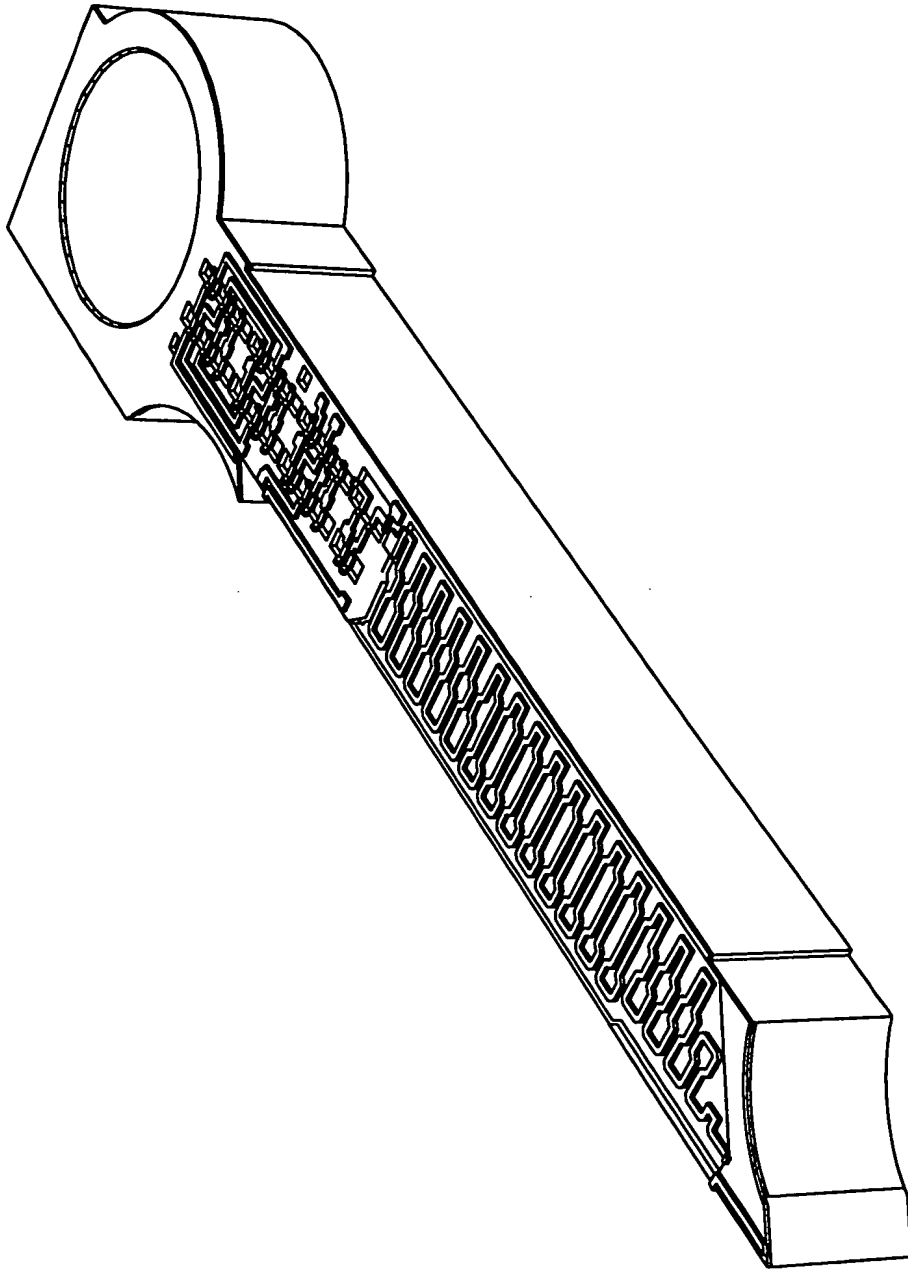


FIG. 30

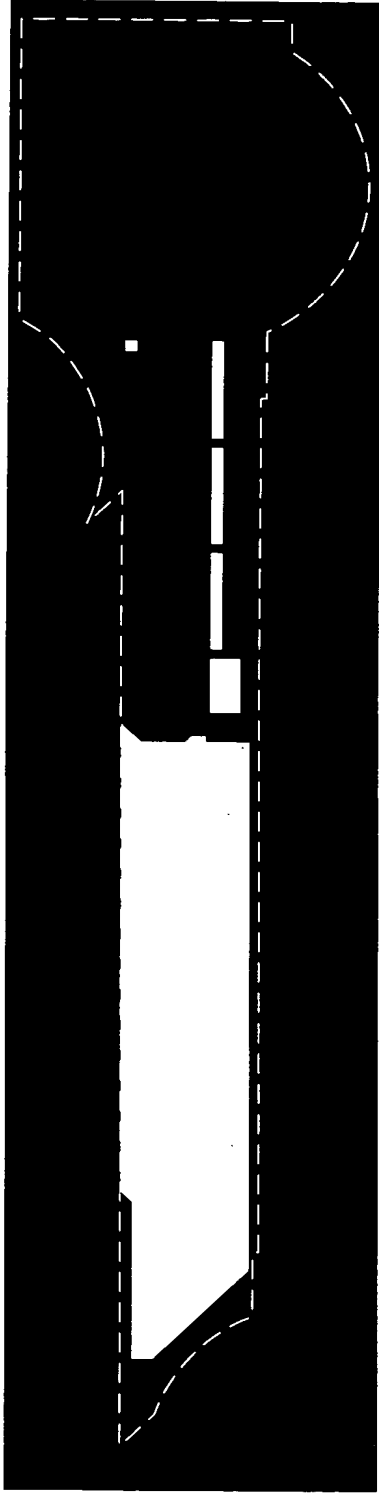


FIG. 31

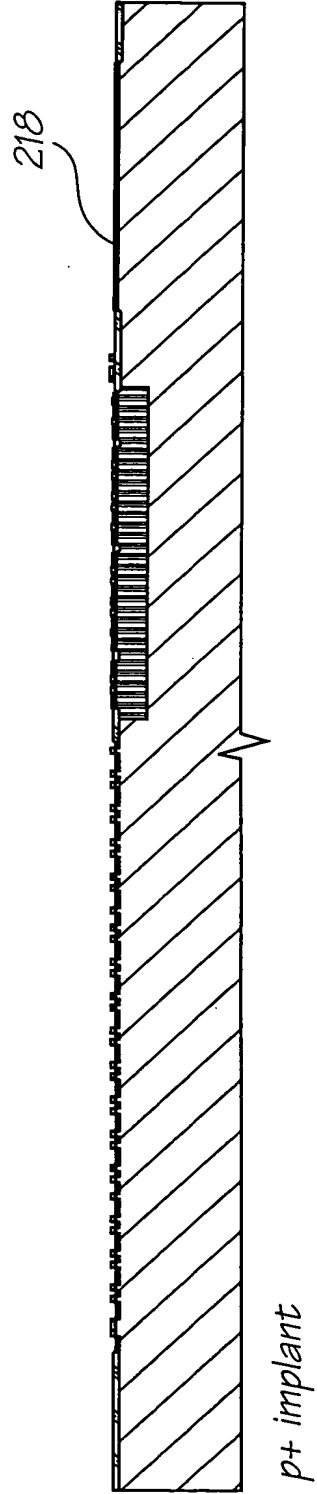


FIG. 32

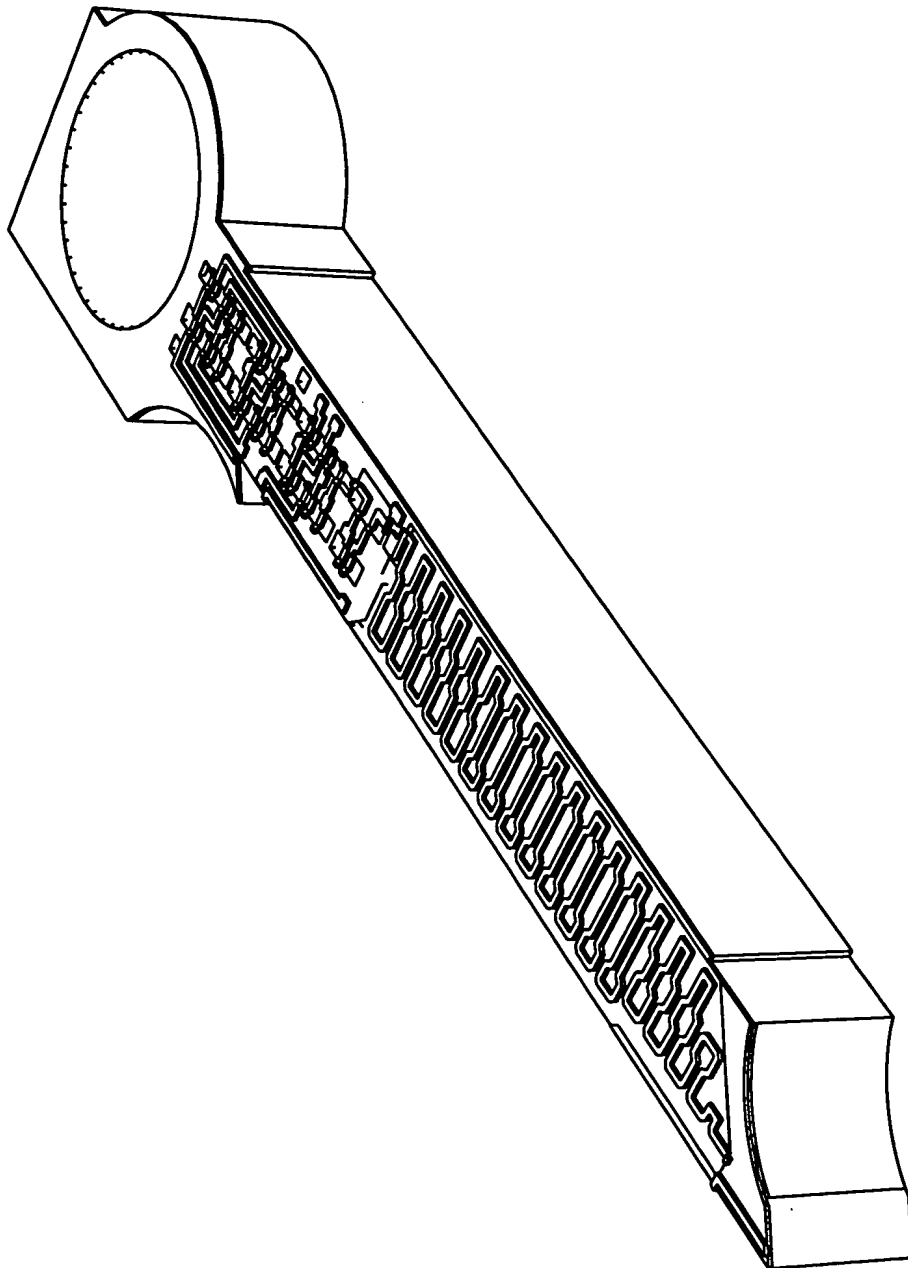
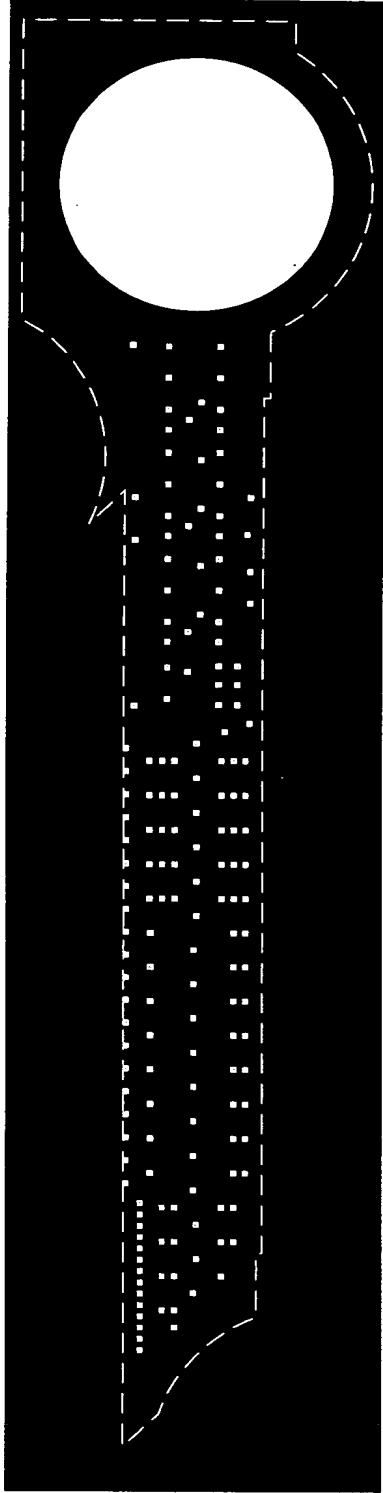
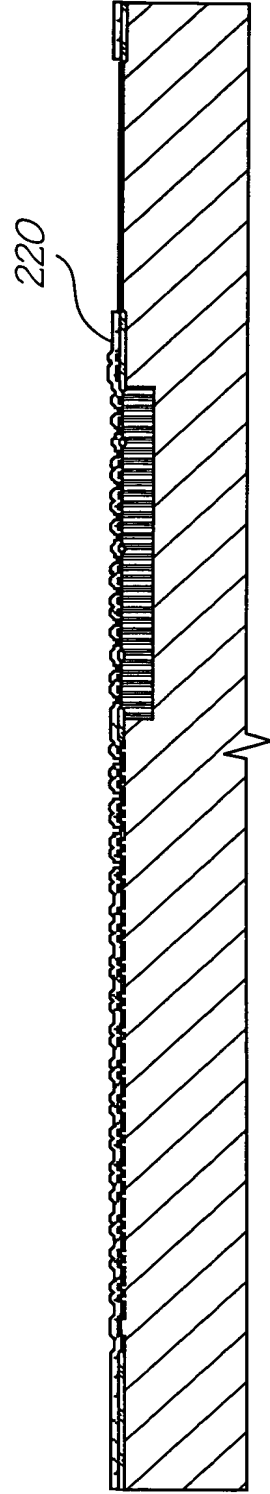


FIG. 33



*Contacts mask*

*FIG. 34*



*Deposit ILD 1, etch contacts*

*FIG. 35*

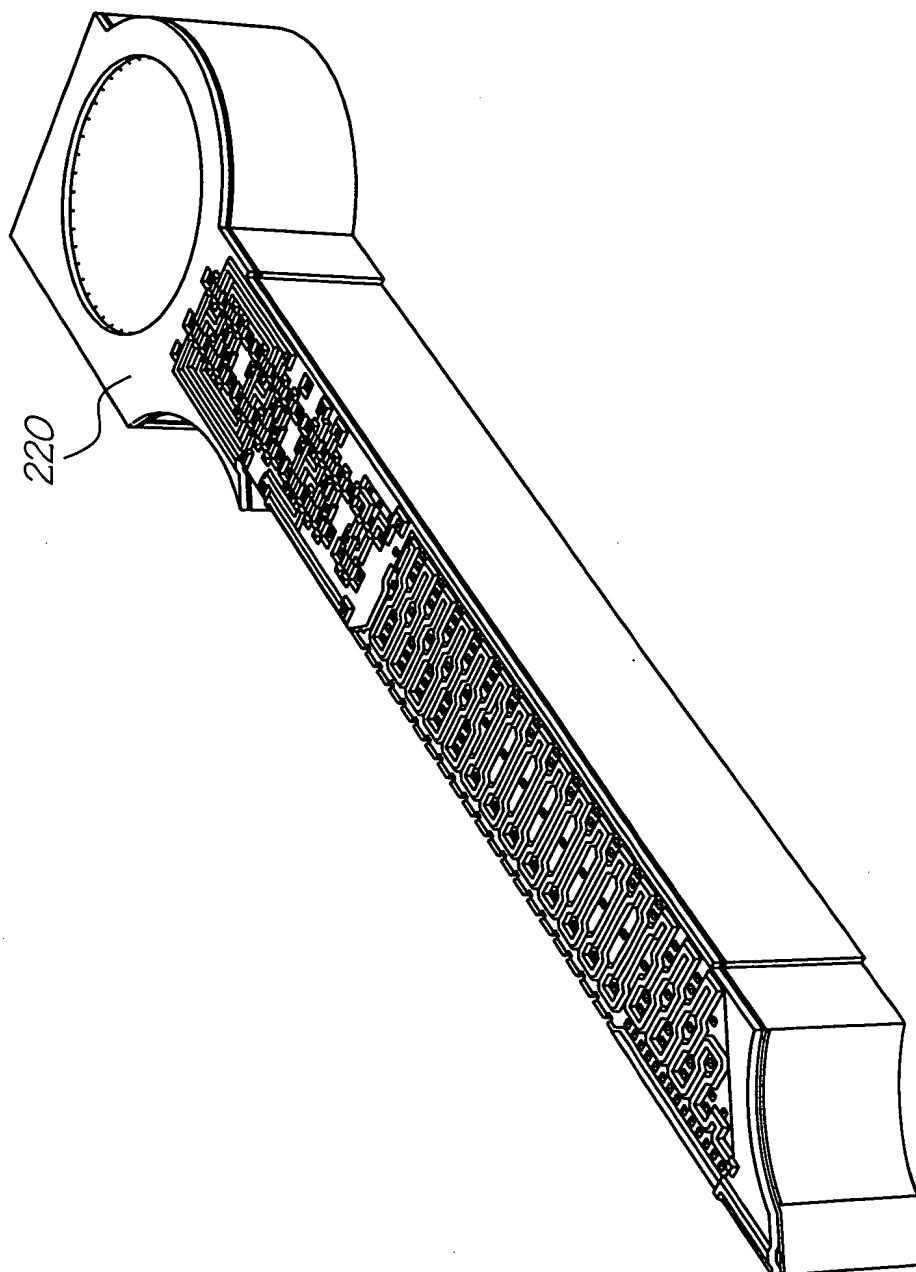
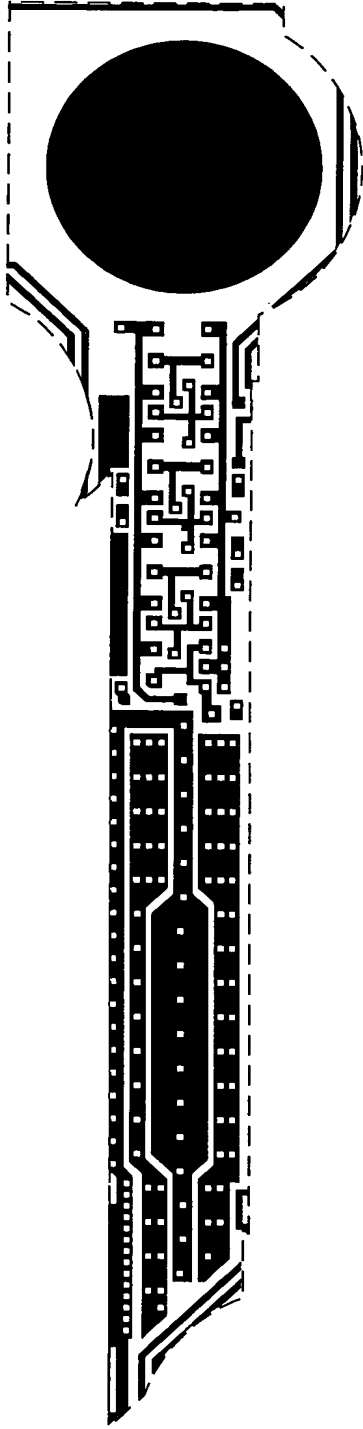
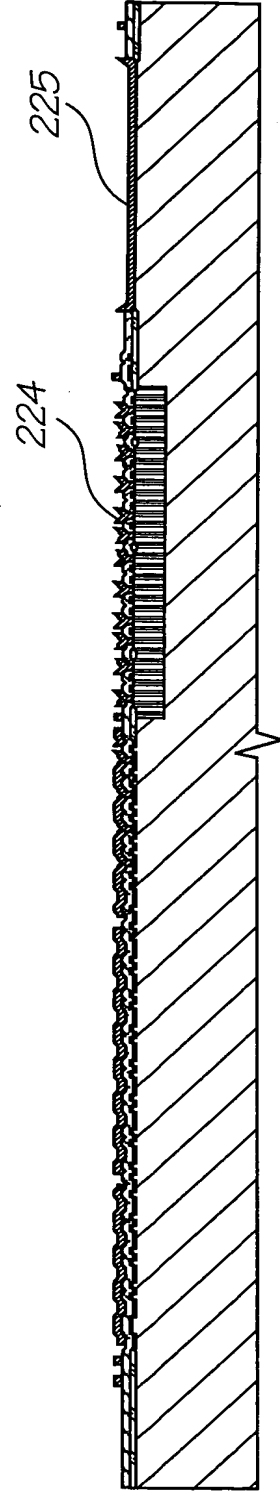


FIG. 36



Metal 1 mask

FIG. 37



Deposit Metal 1

FIG. 38



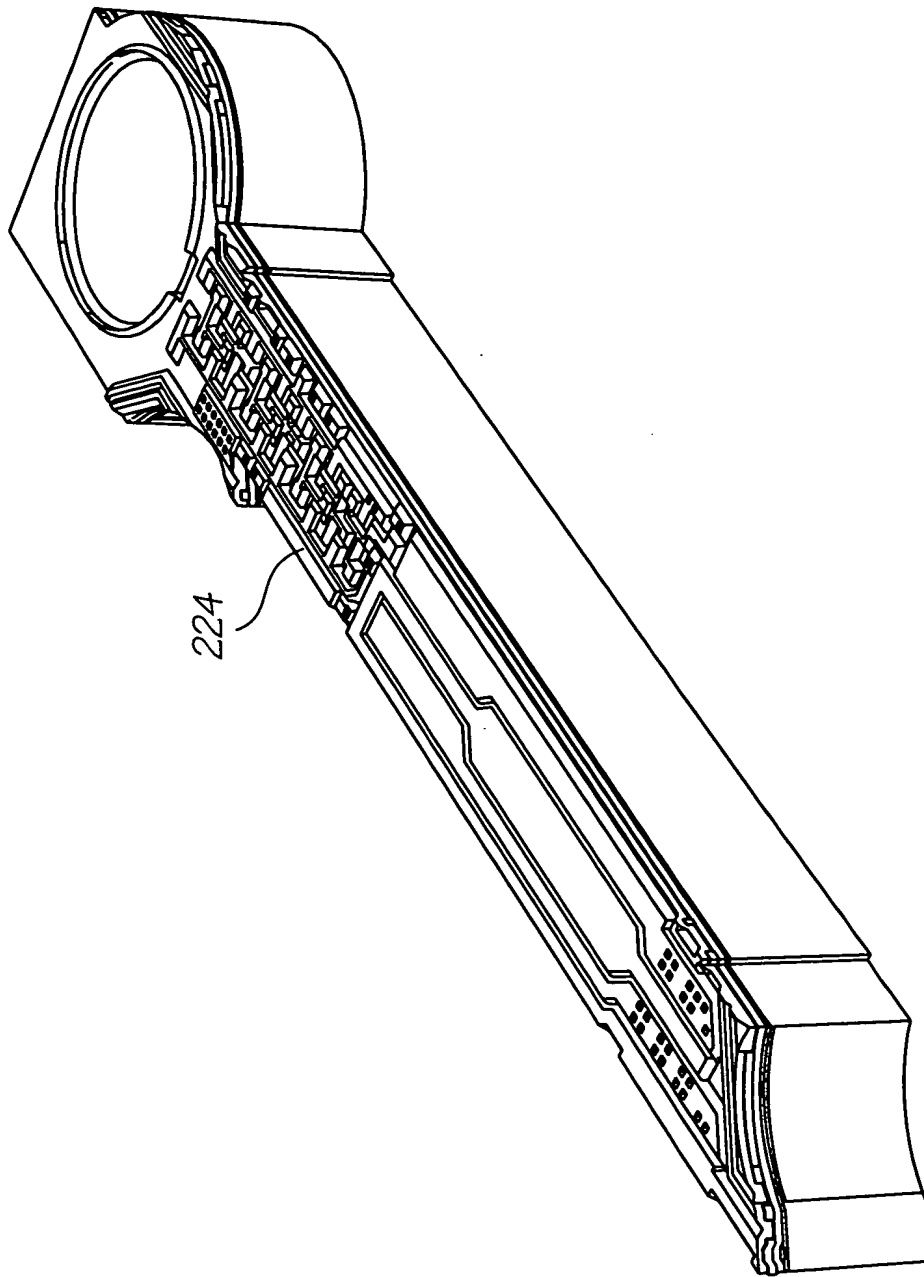


FIG. 39

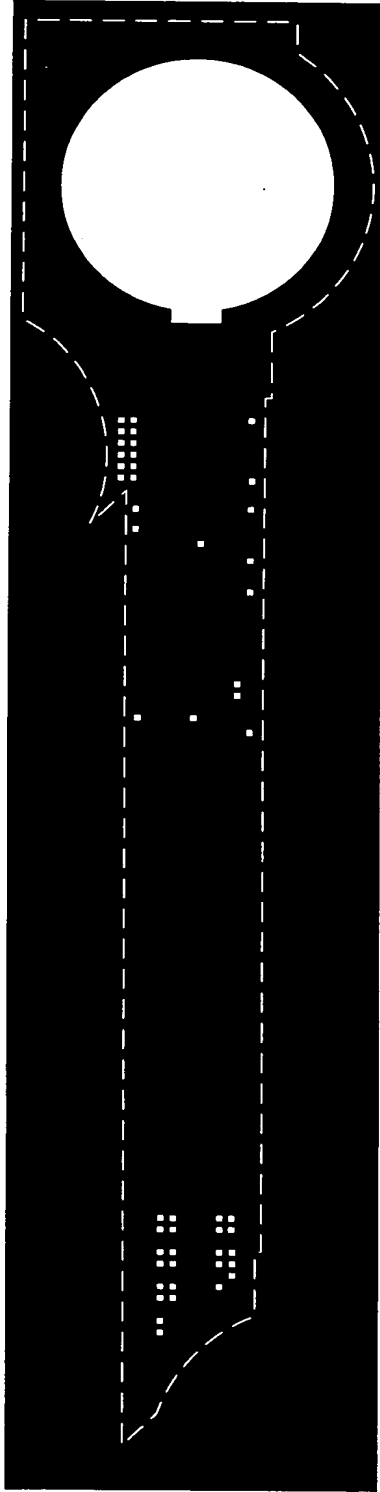


FIG. 40

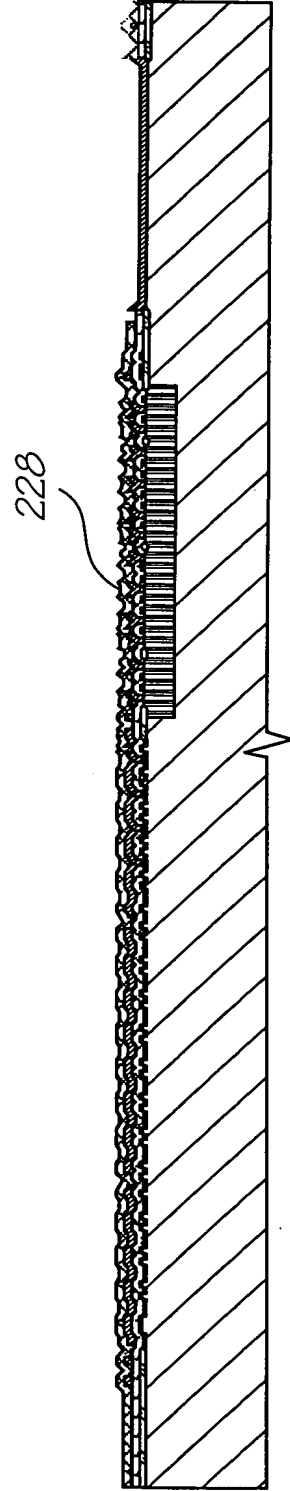
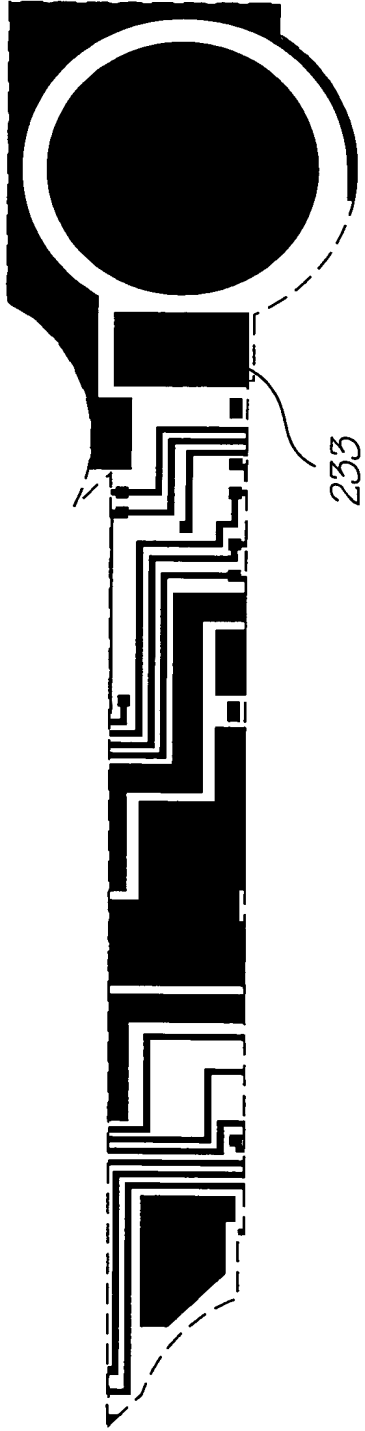
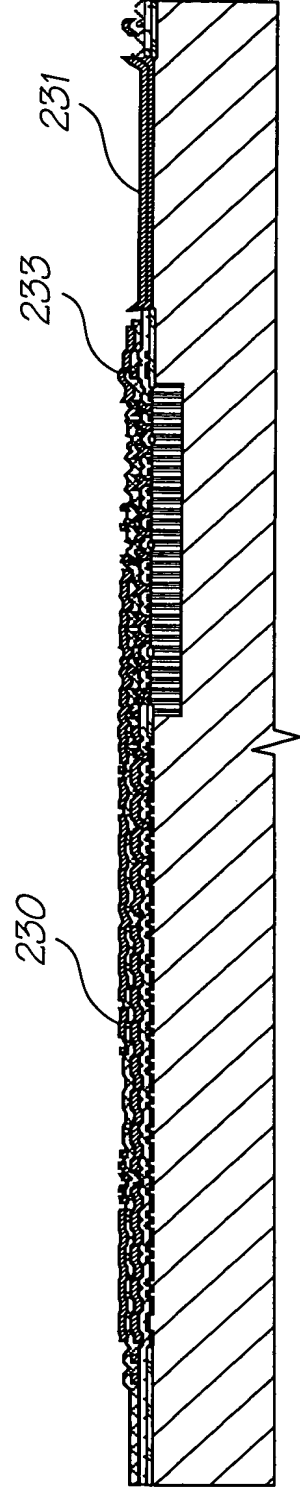


FIG. 41



Metal 2 mask

FIG. 42



Deposit metal 2

FIG. 43

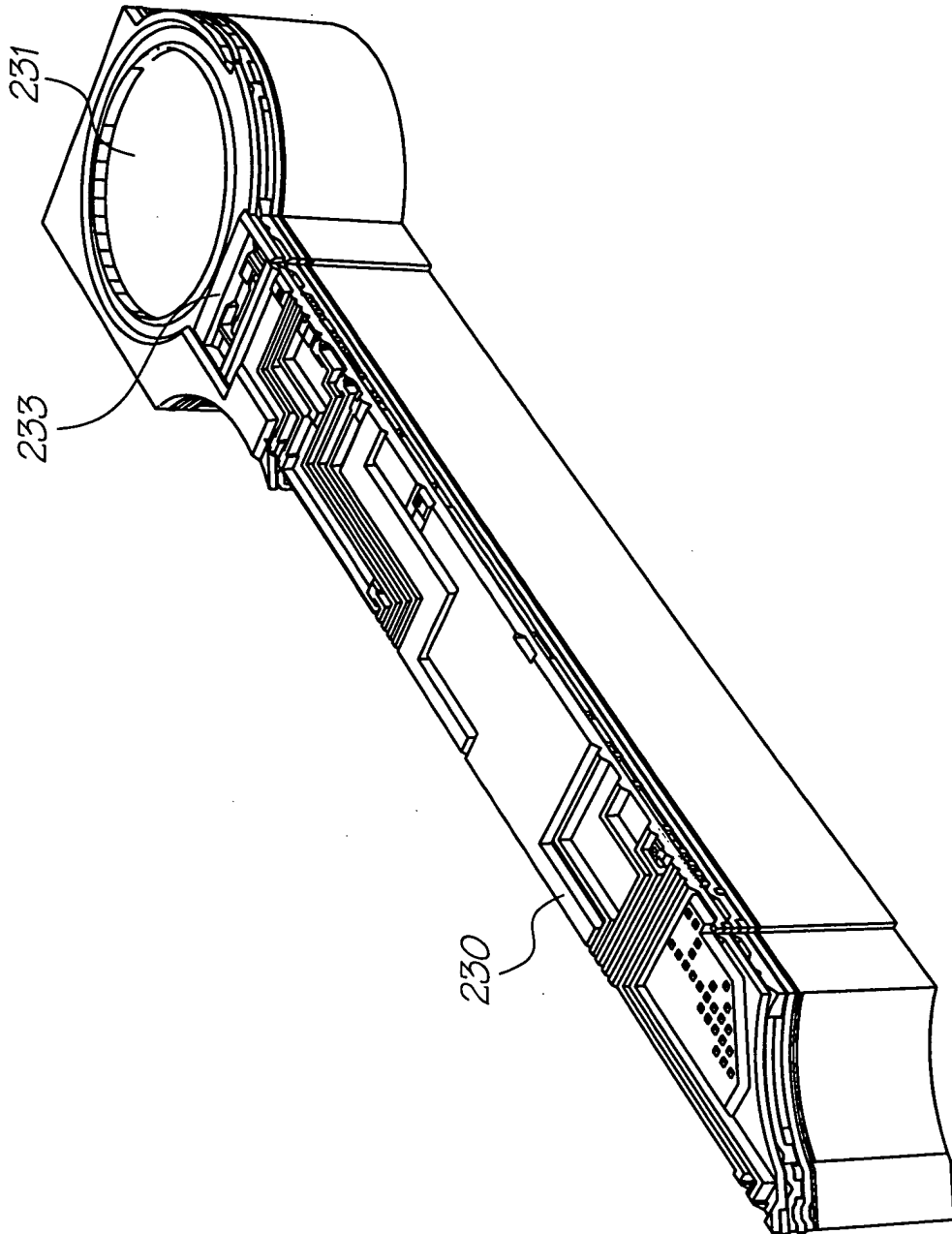
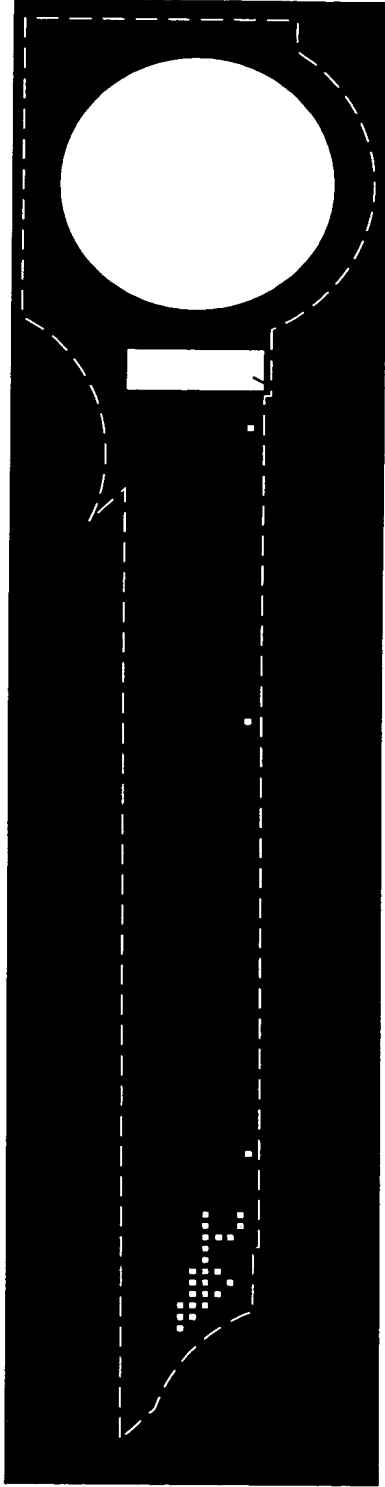
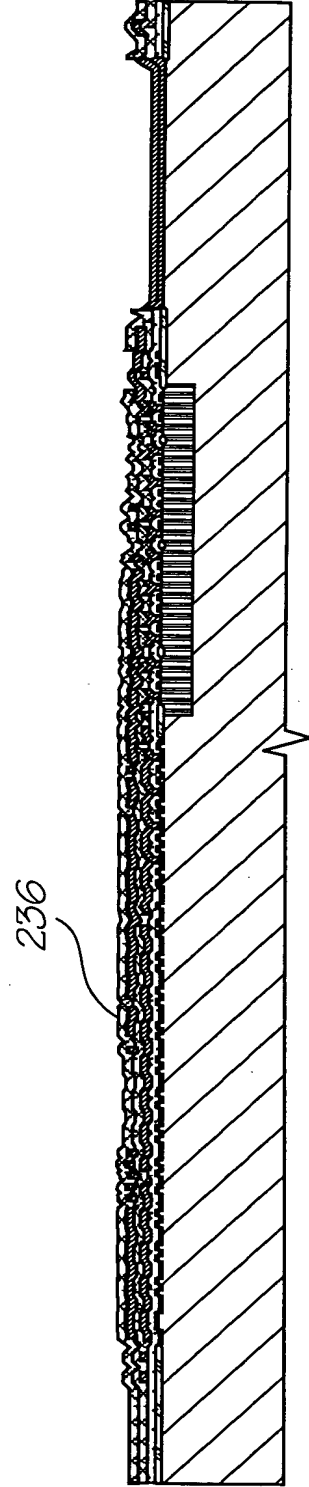


FIG. 44



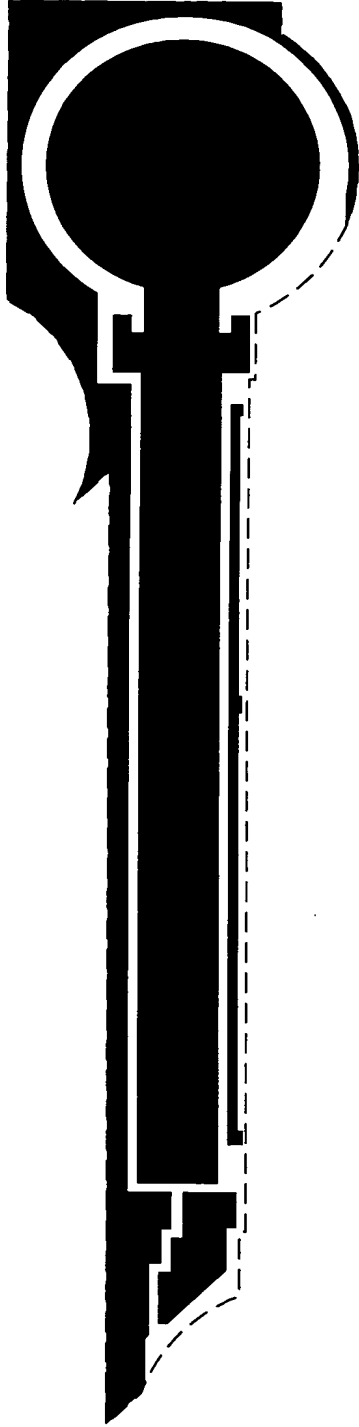
Via 2 mask

FIG. 45



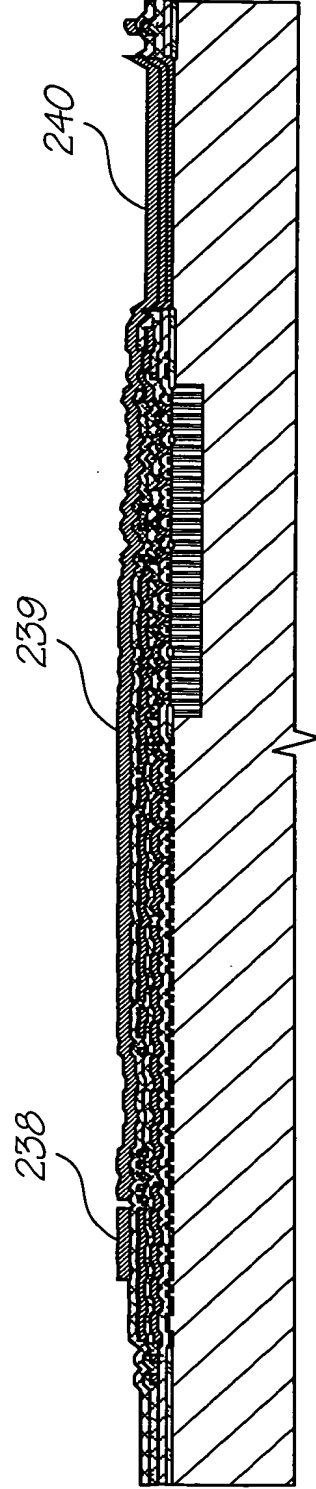
Deposit ILD 3, etch vias

FIG. 46



Metal 3 mask

FIG. 47



Deposit metal 3

FIG. 48

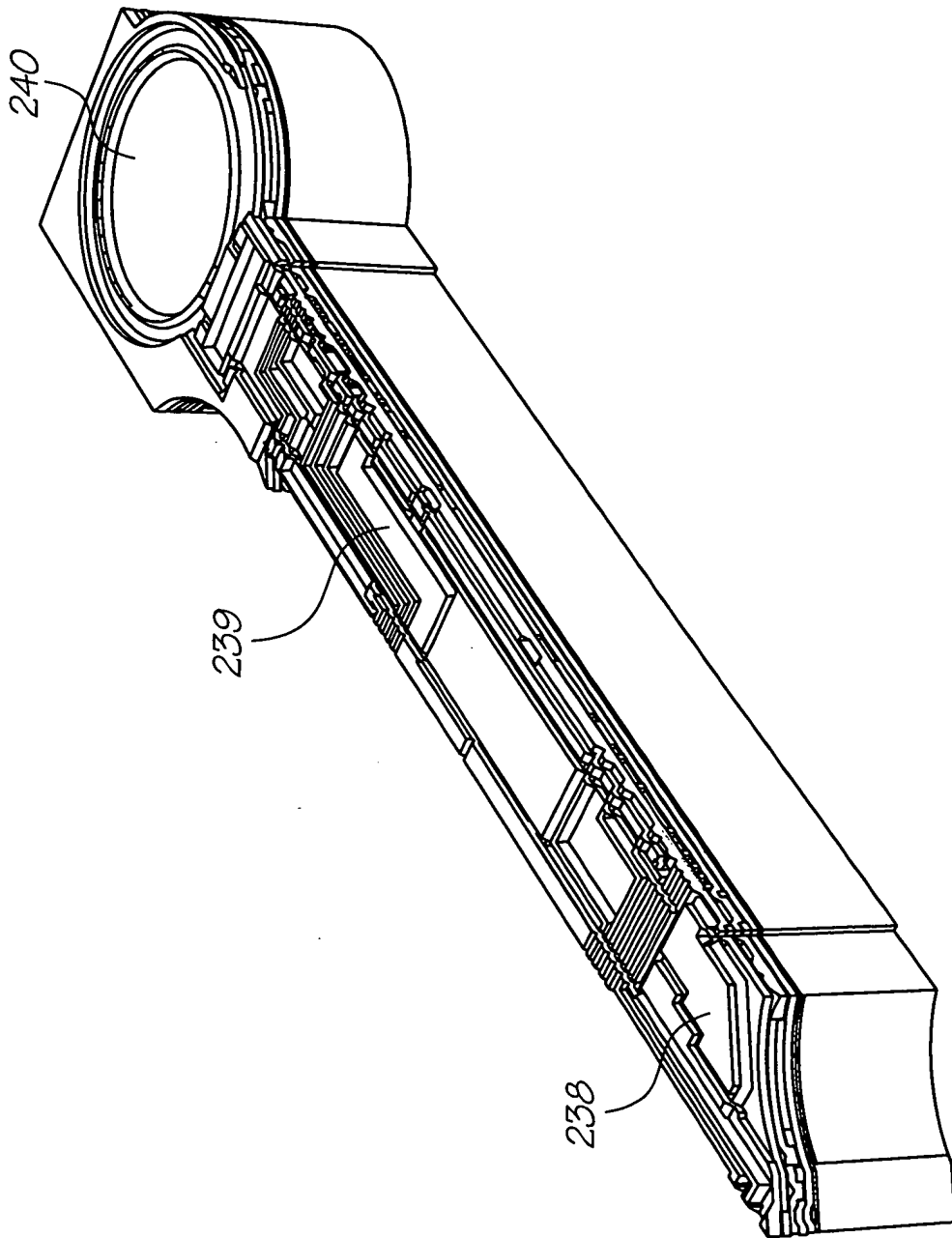
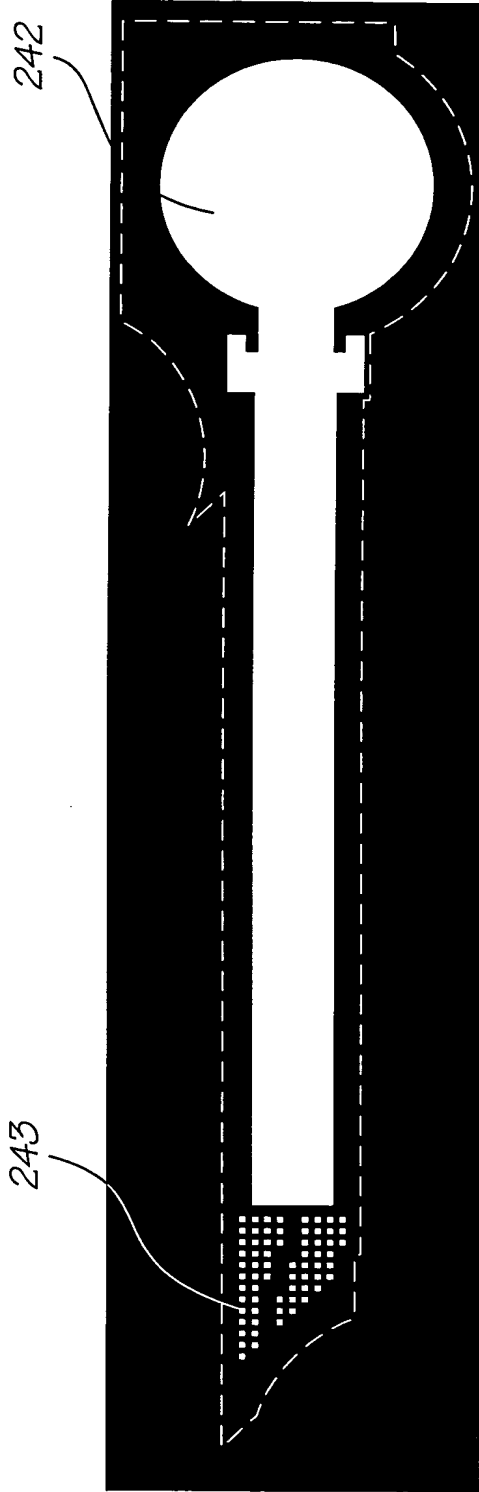
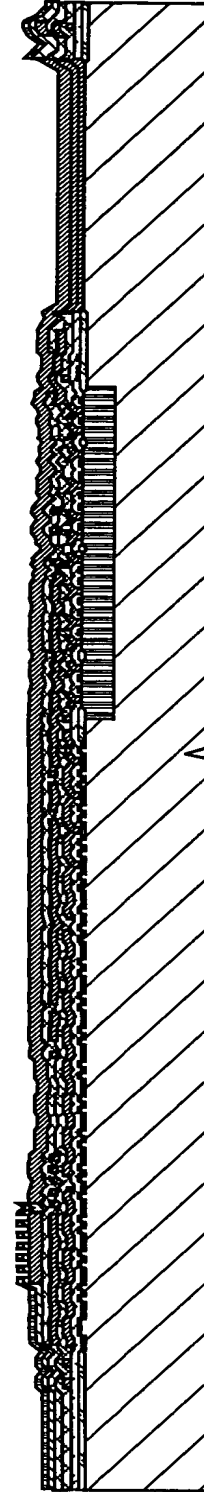


FIG. 49



Via 3 / Passivation mask

FIG. 50



Deposit passivation oxide & nitride, etch vias

FIG. 51



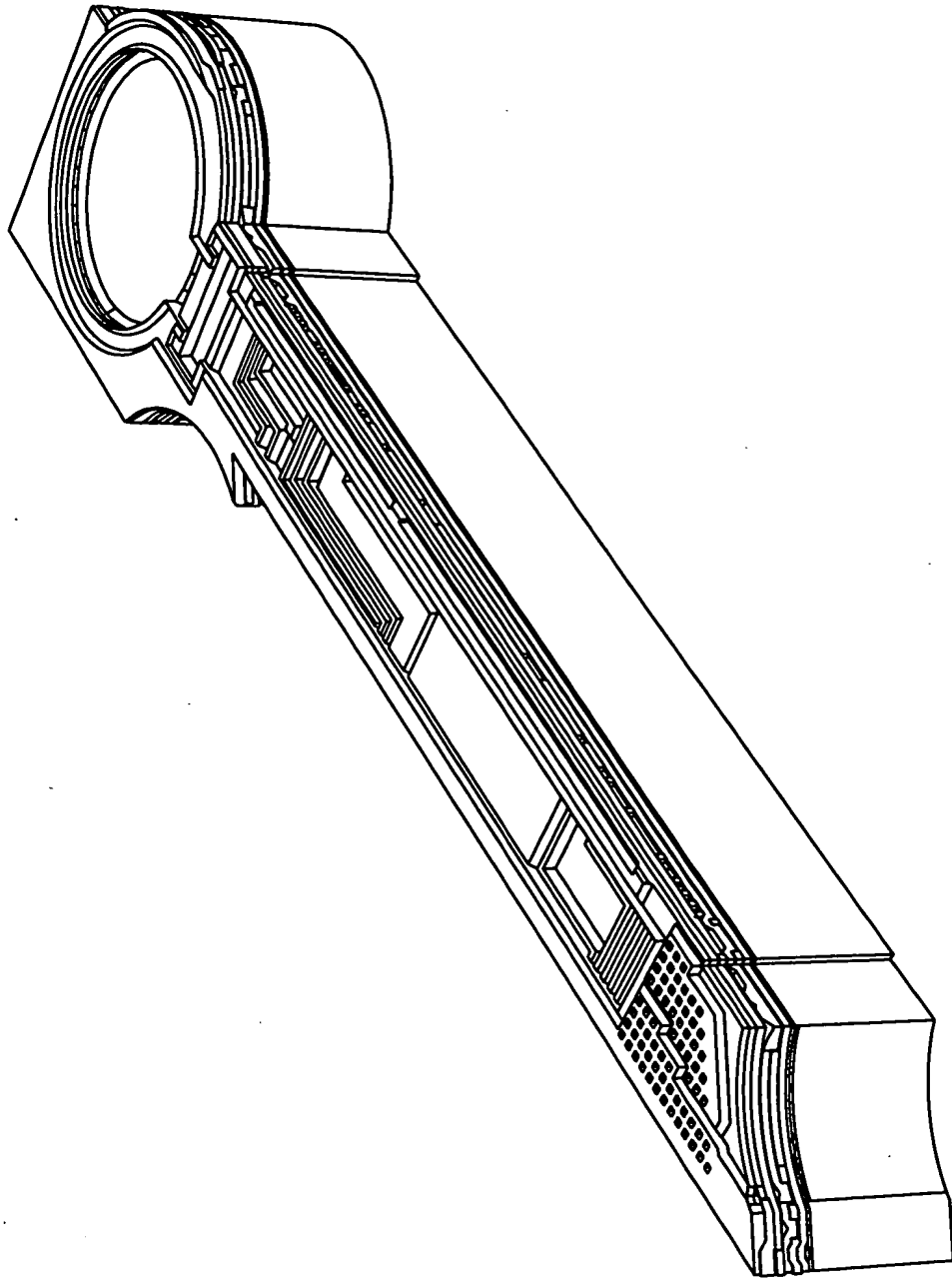
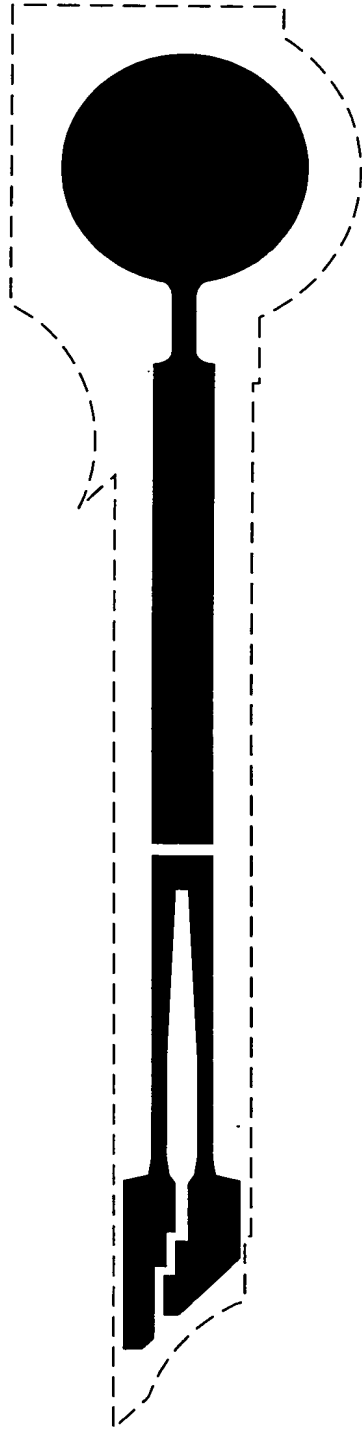
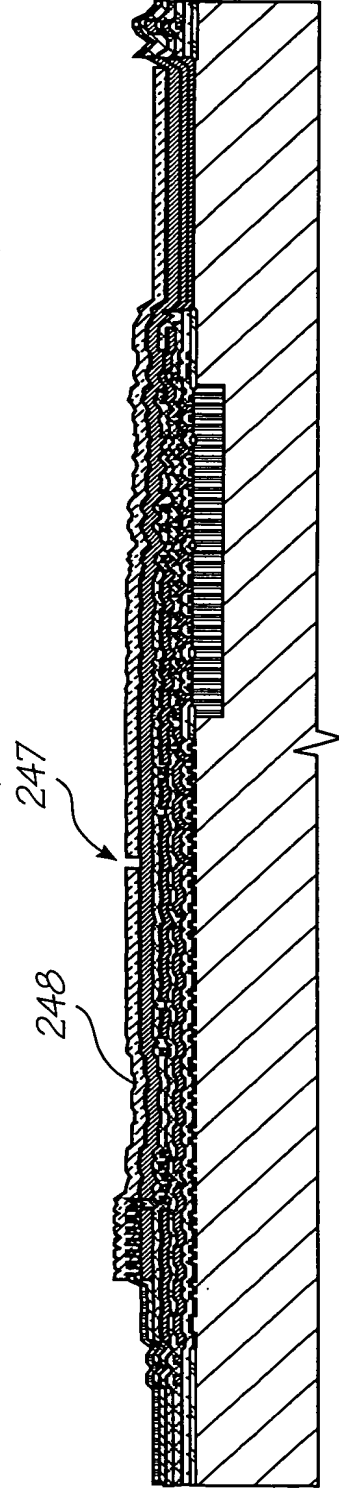


FIG. 52



Heater mask

FIG. 53



Deposit heater TiN

FIG. 54

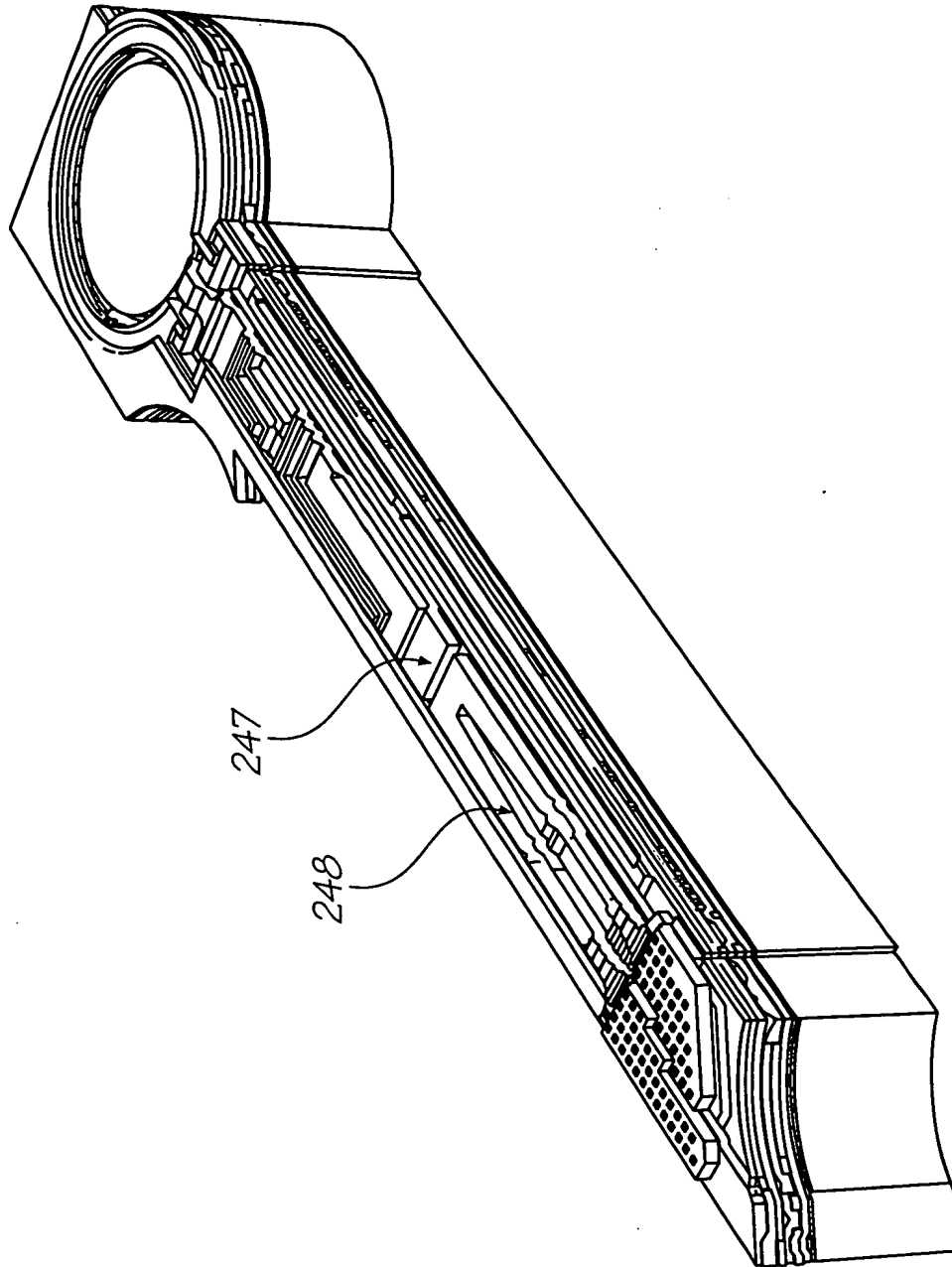
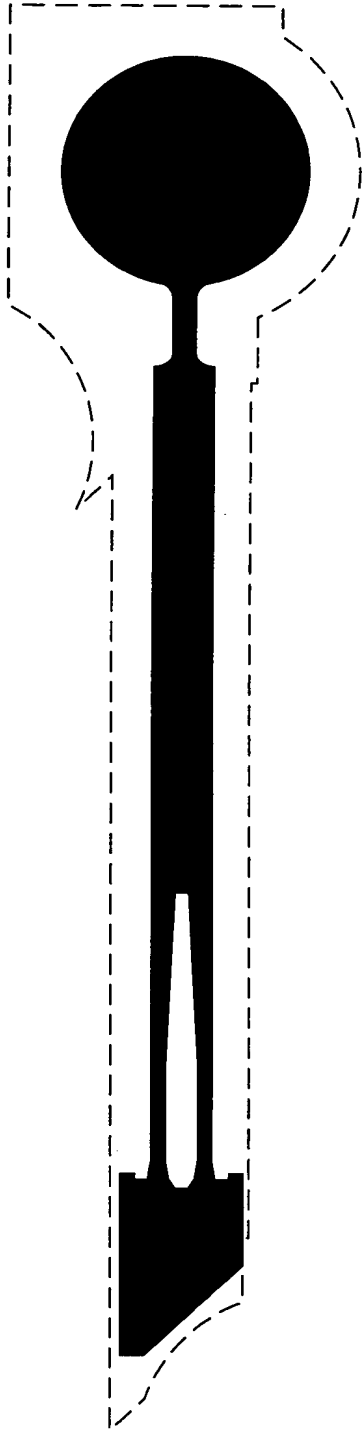
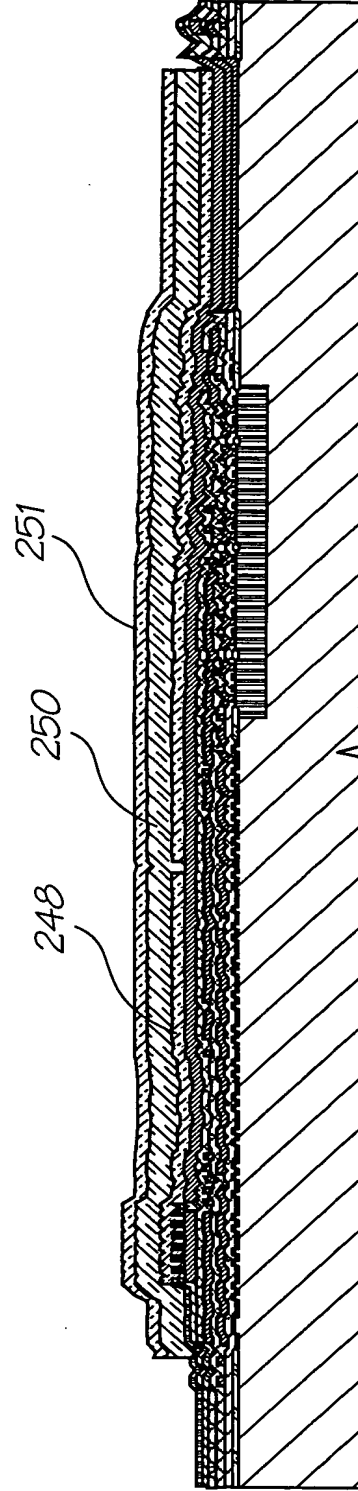


FIG. 55



Actuator / bend compensator mask

FIG. 56



Deposit actuator glass and bend compensator TiN, etch together

FIG. 57

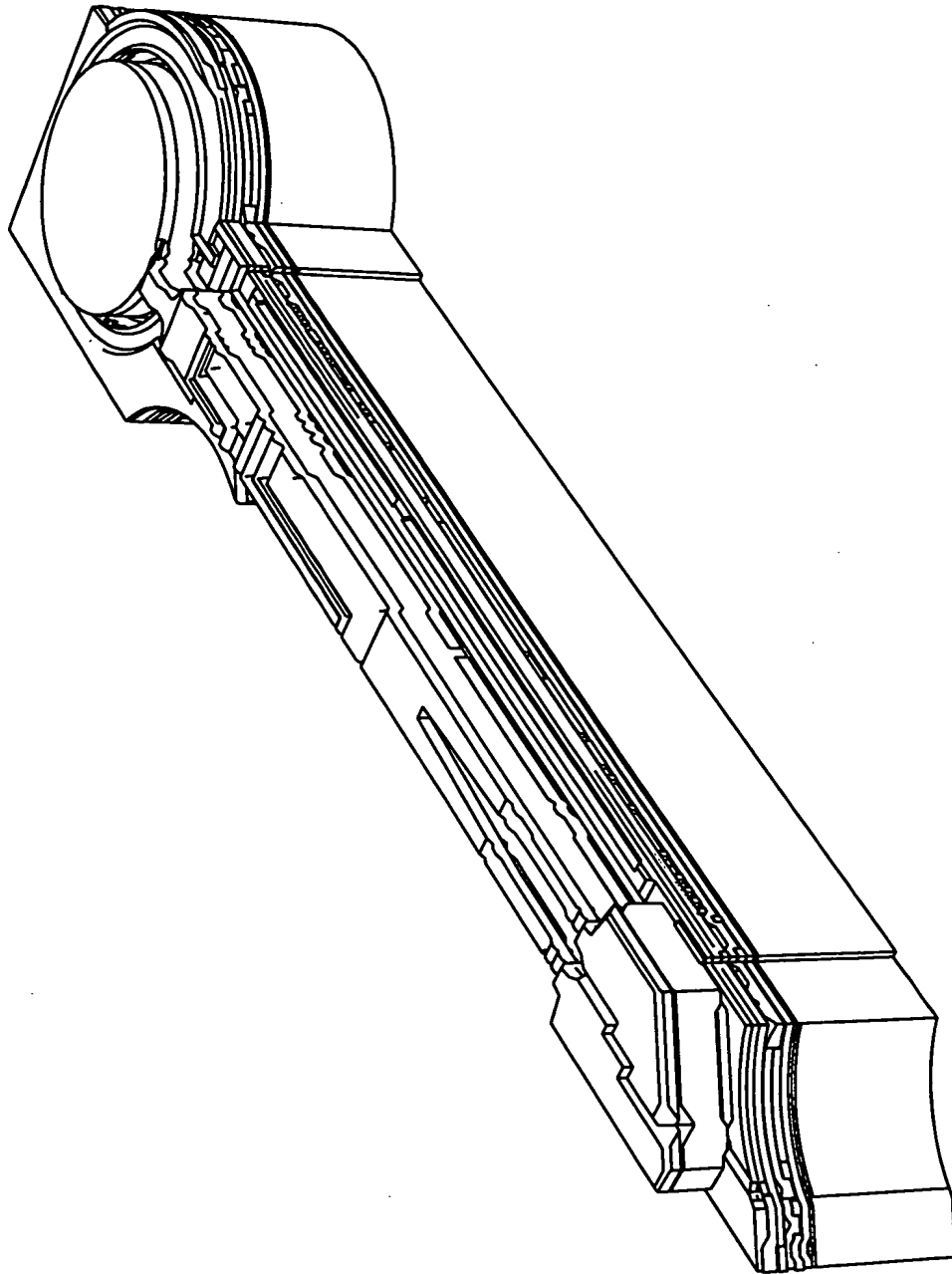
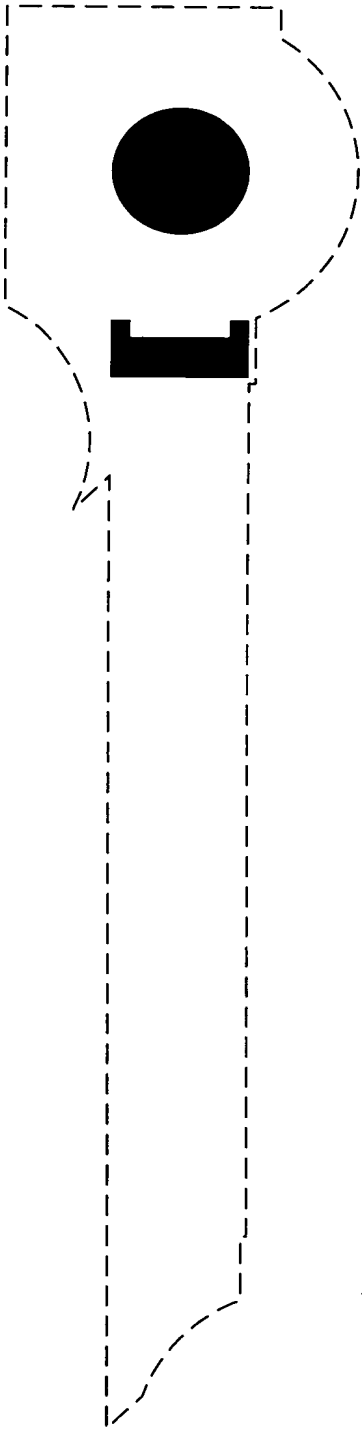
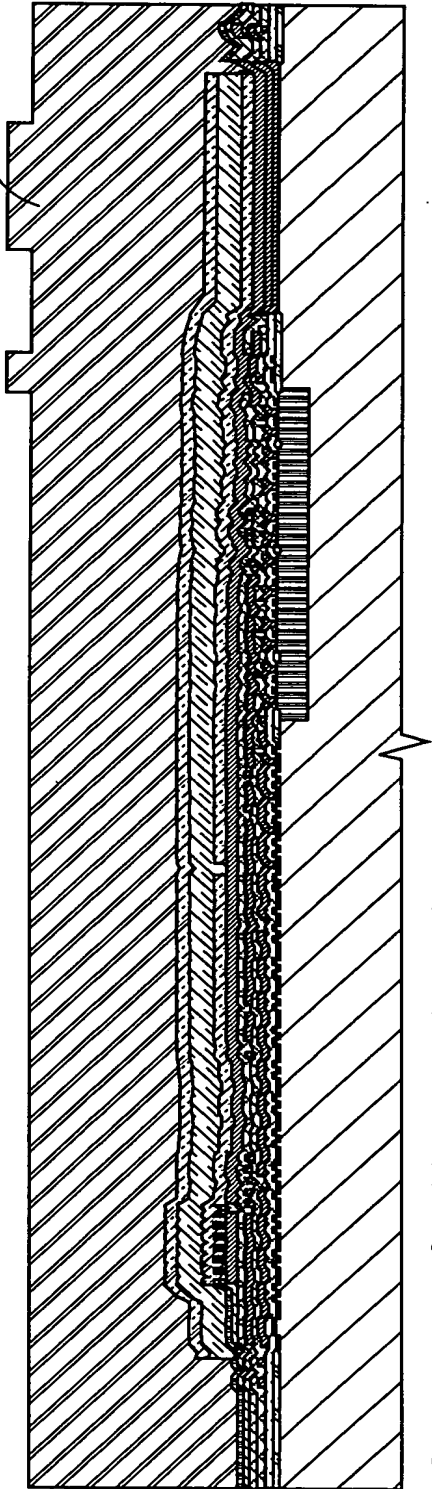


FIG. 58



Nozzle mask

FIG. 59



Deposit sacrificial layer, etch nozzles

FIG. 60

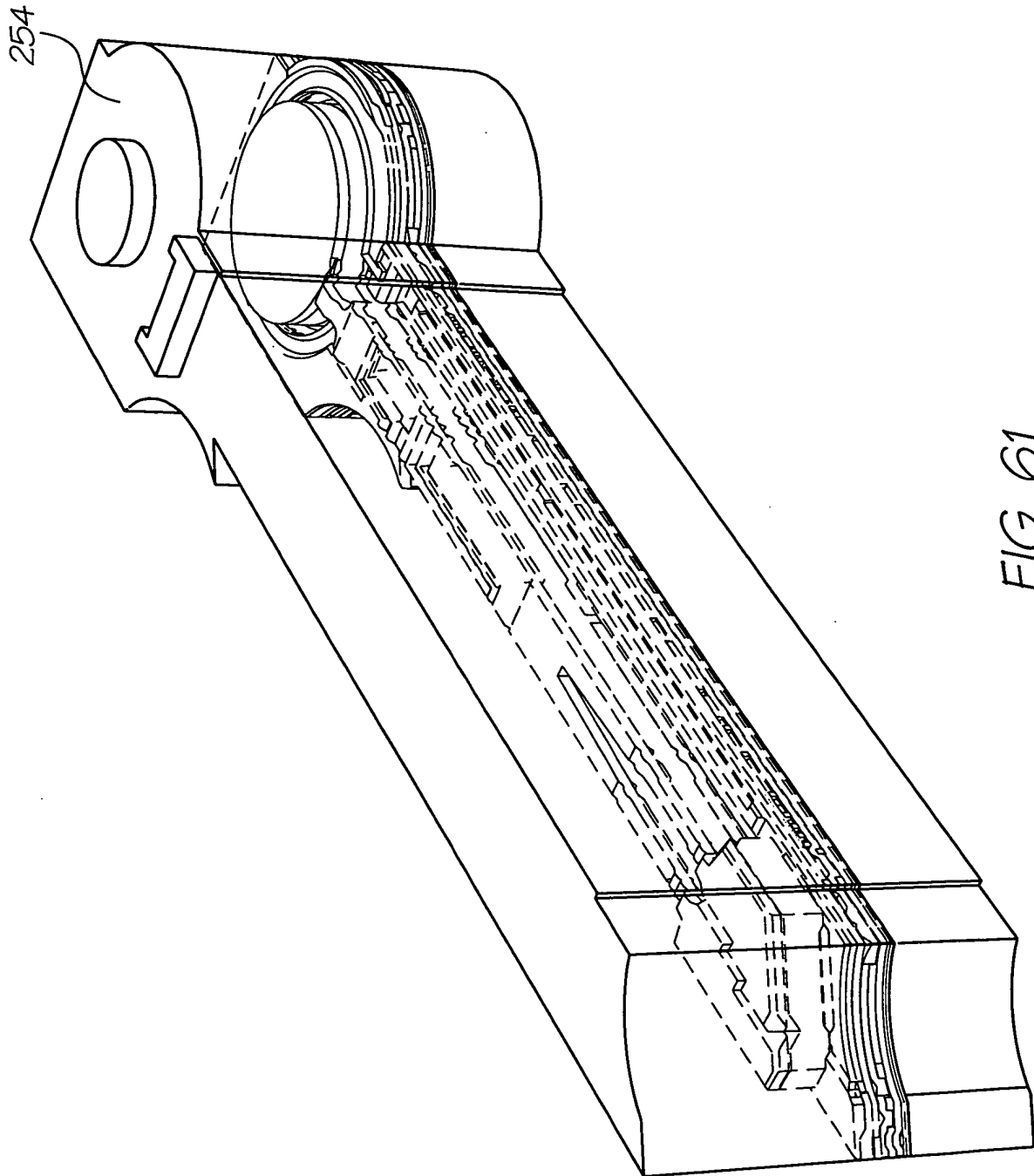
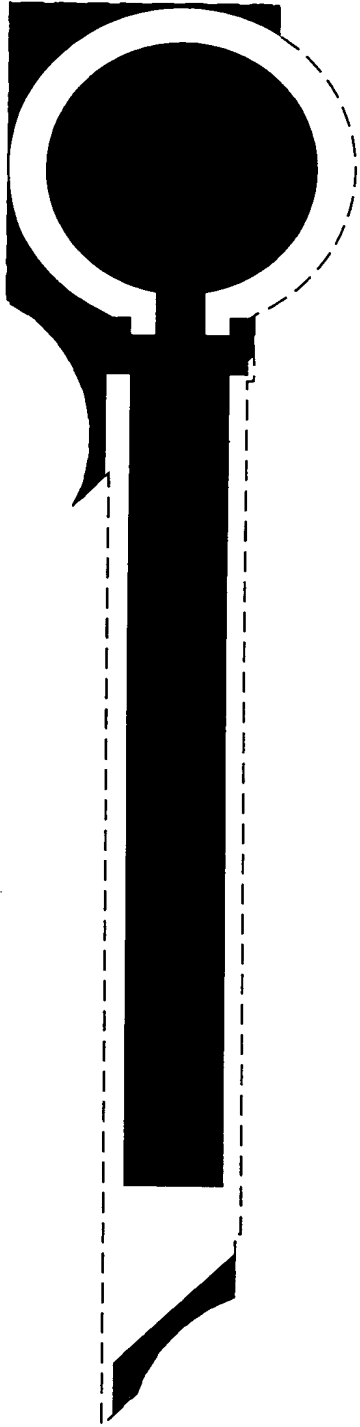


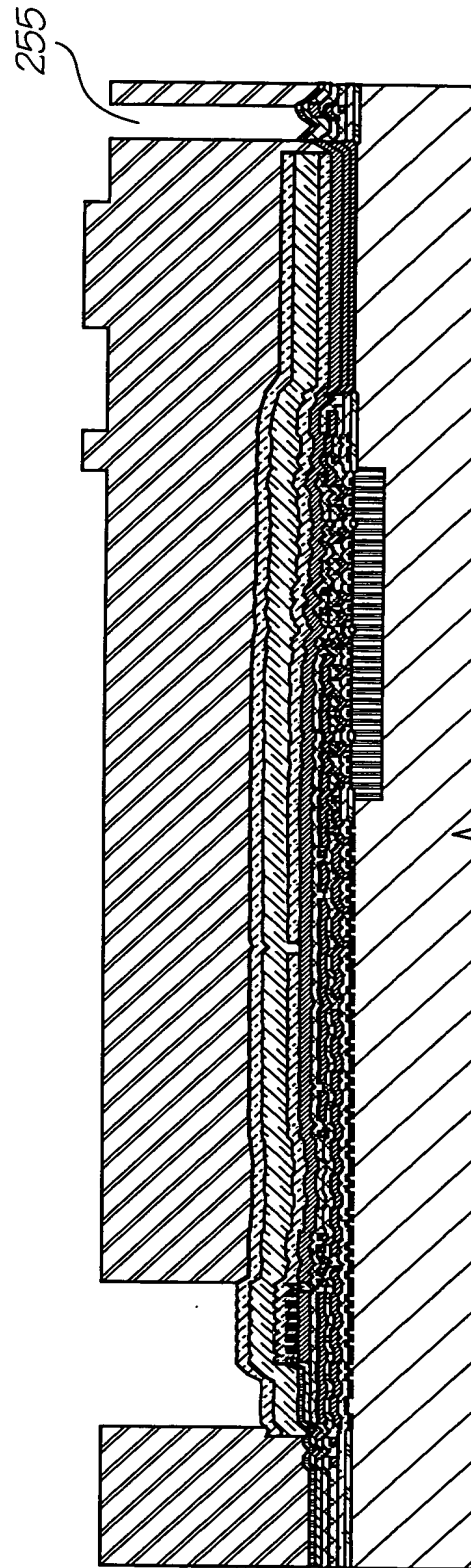
FIG. 61



Chamber mask

FIG. 62

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Etch chambers in sacrificial layer

FIG. 63



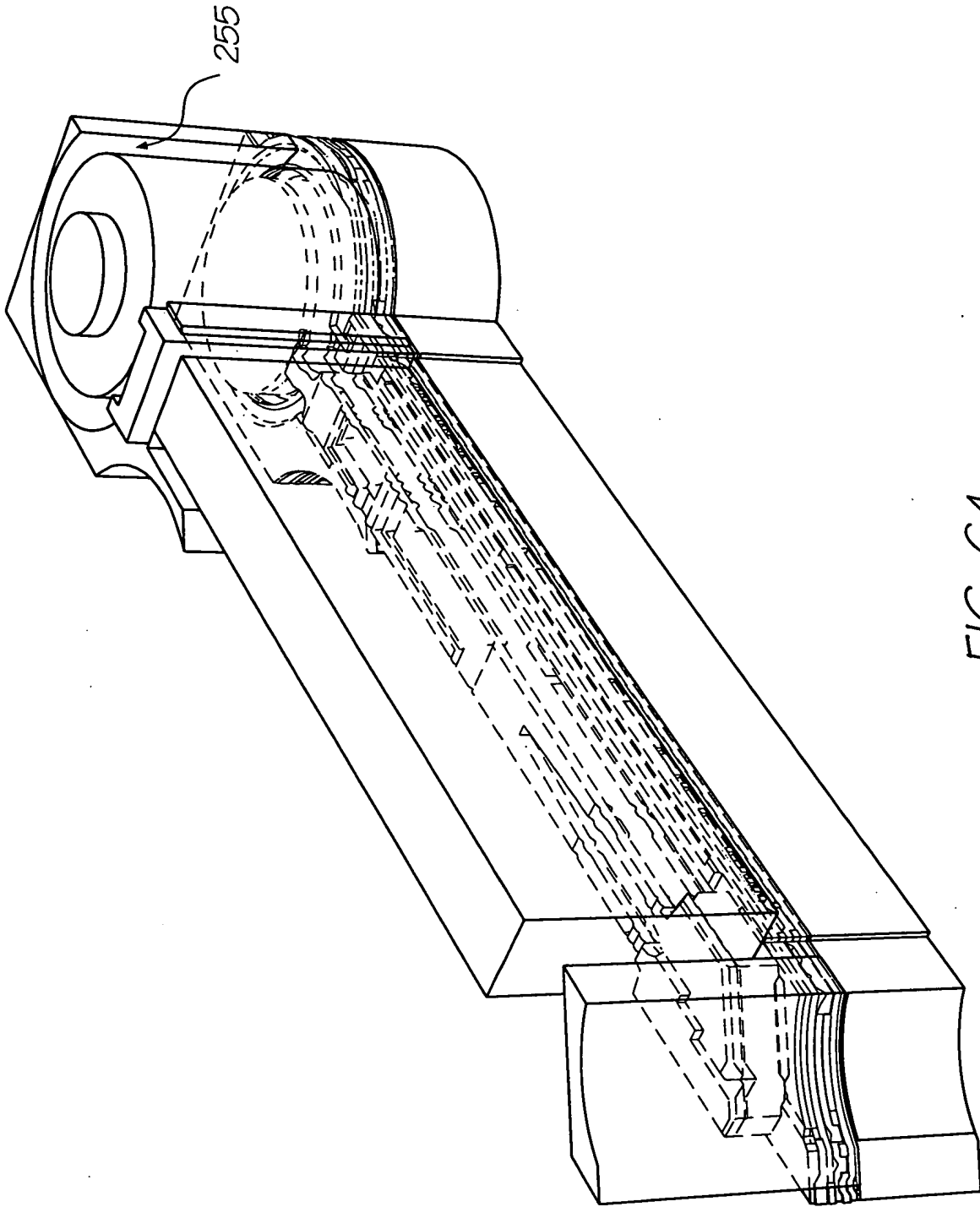


FIG. 64

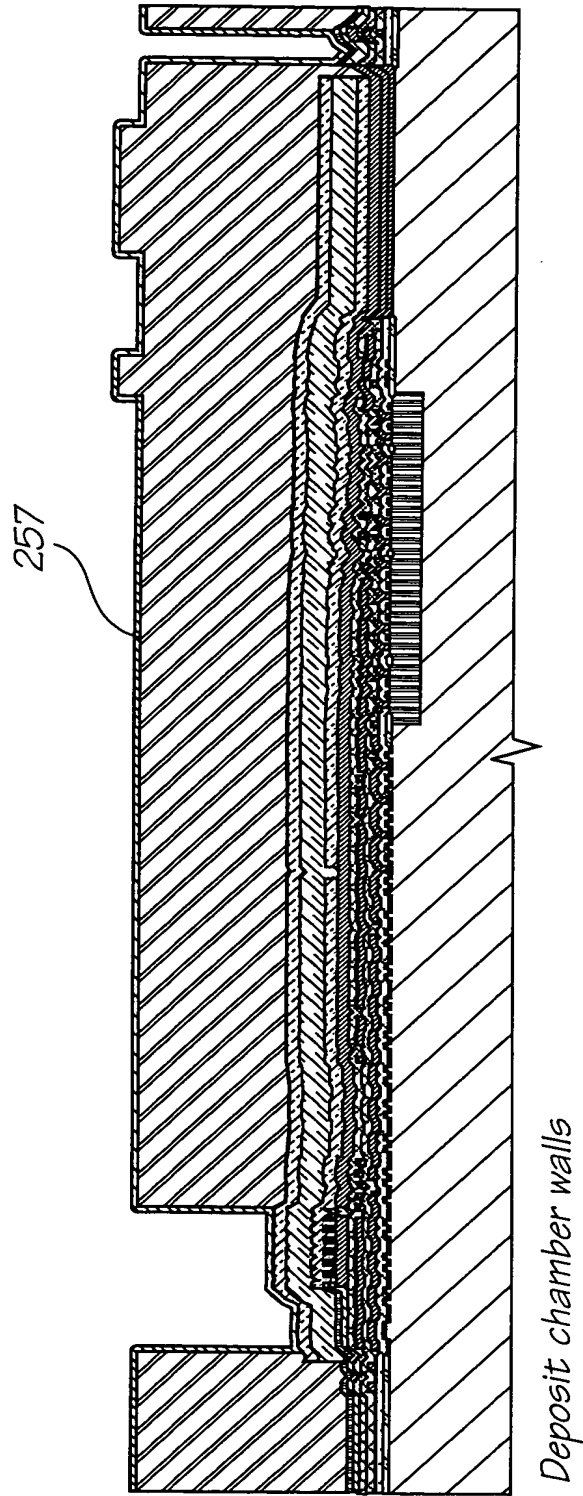


FIG. 65

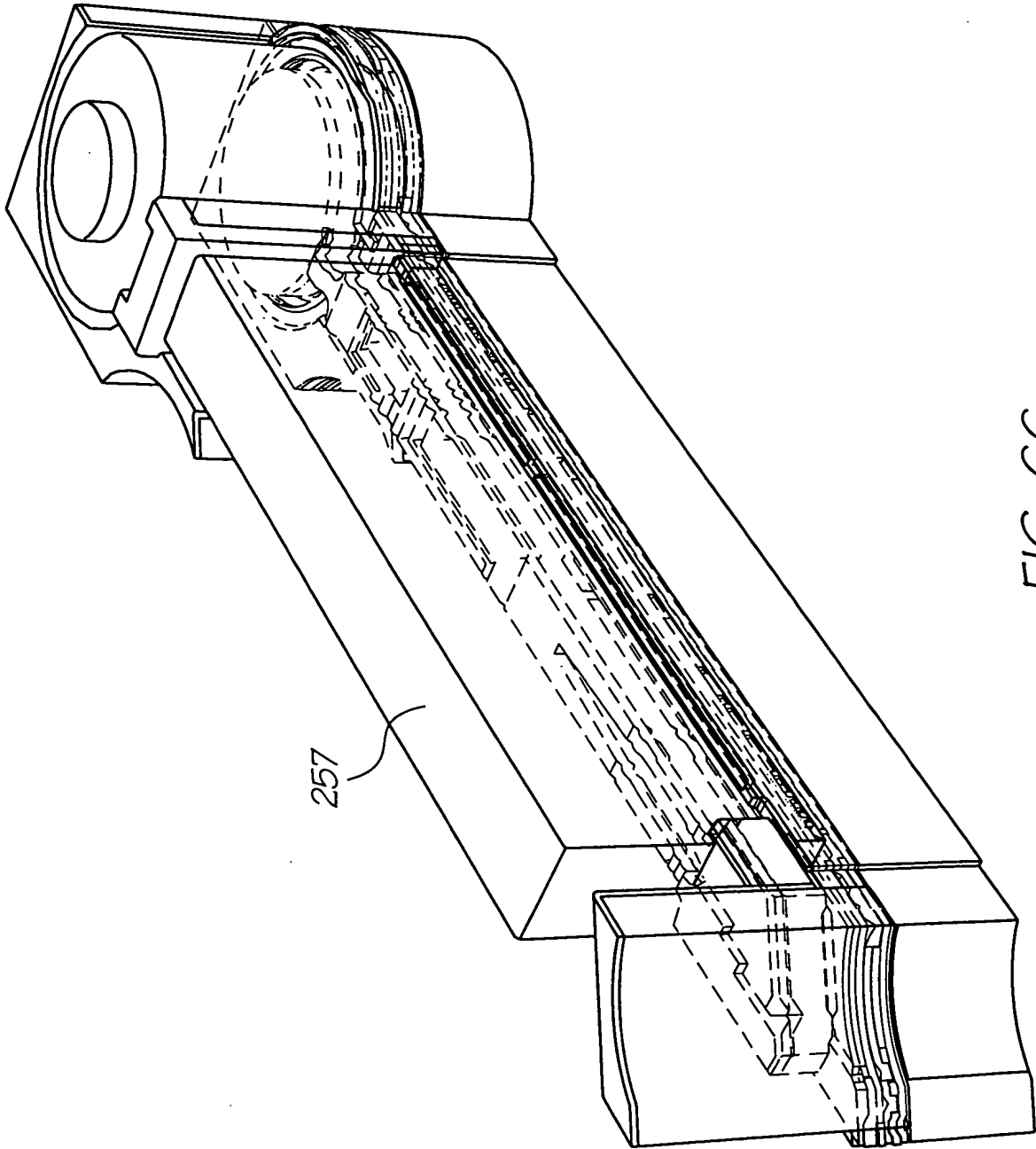
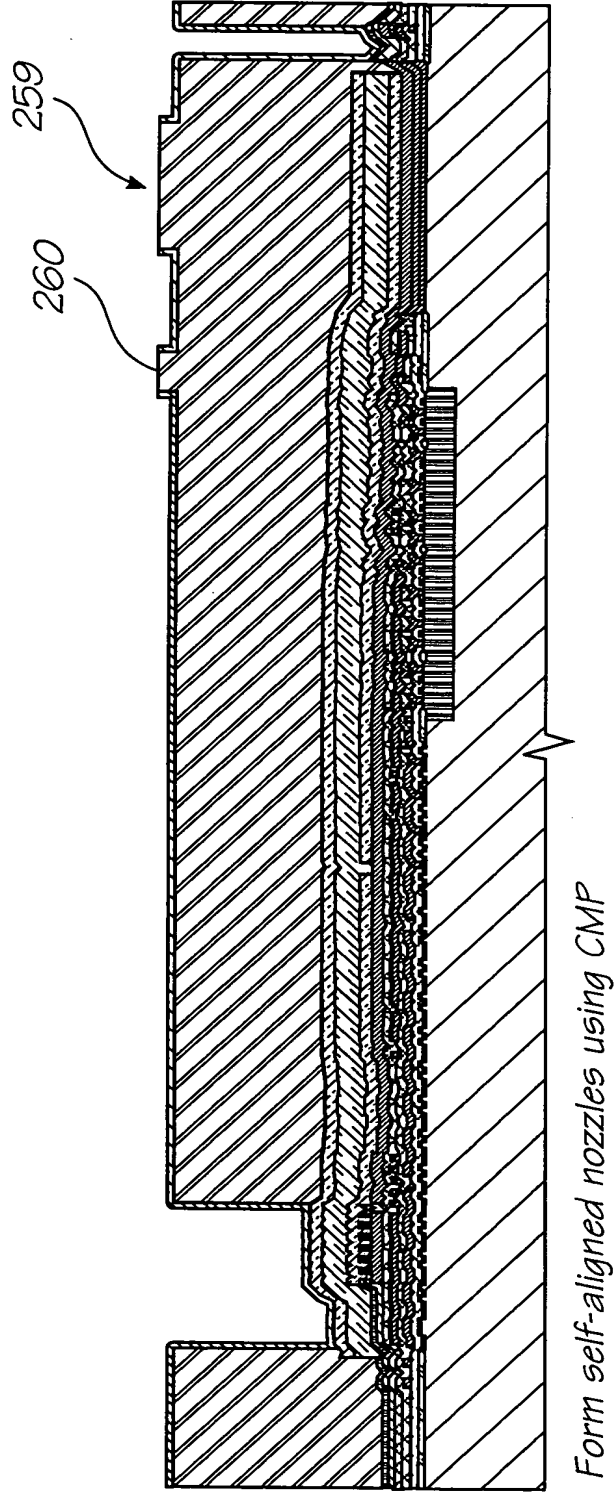


FIG. 66



Form self-aligned nozzles using CMP

FIG. 67

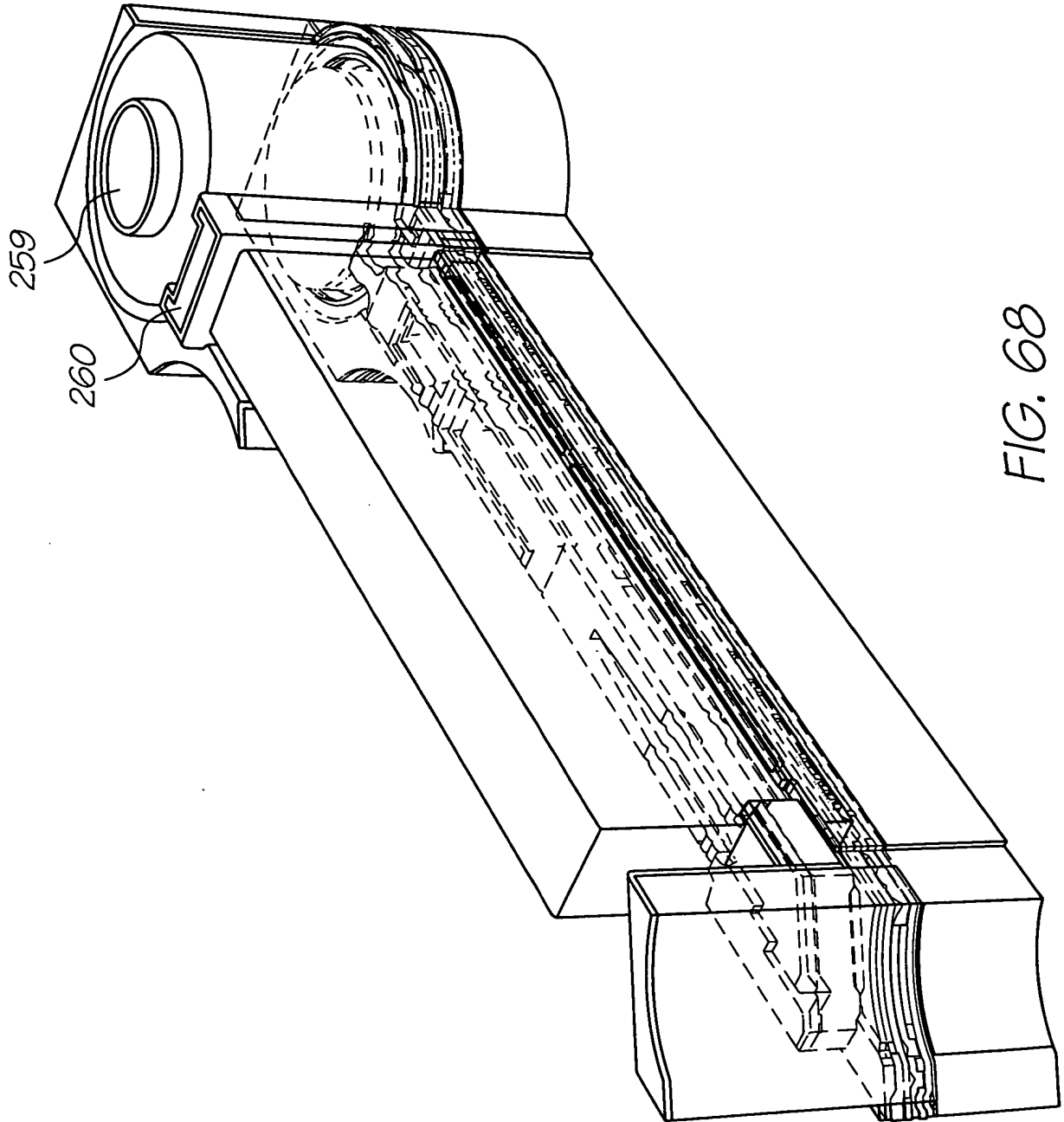
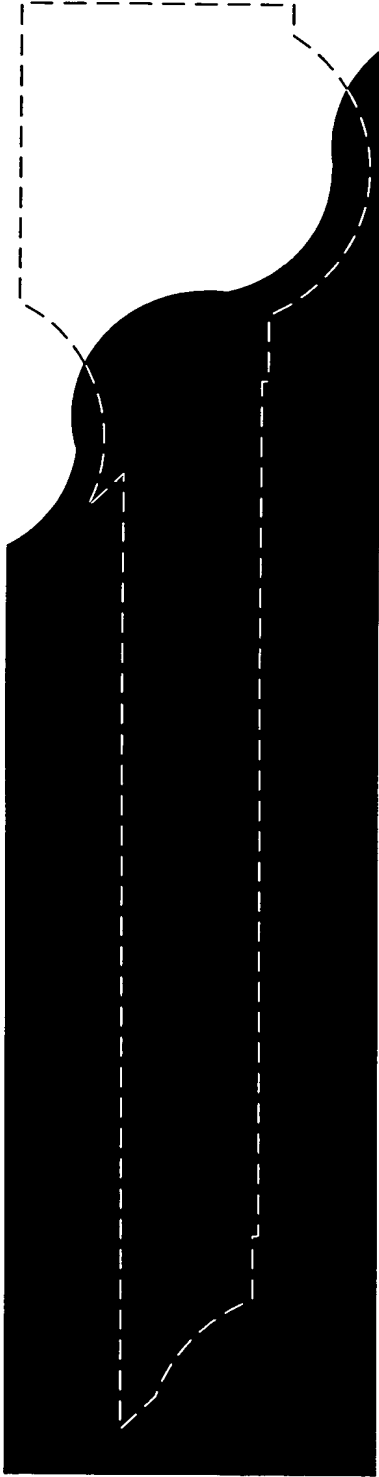
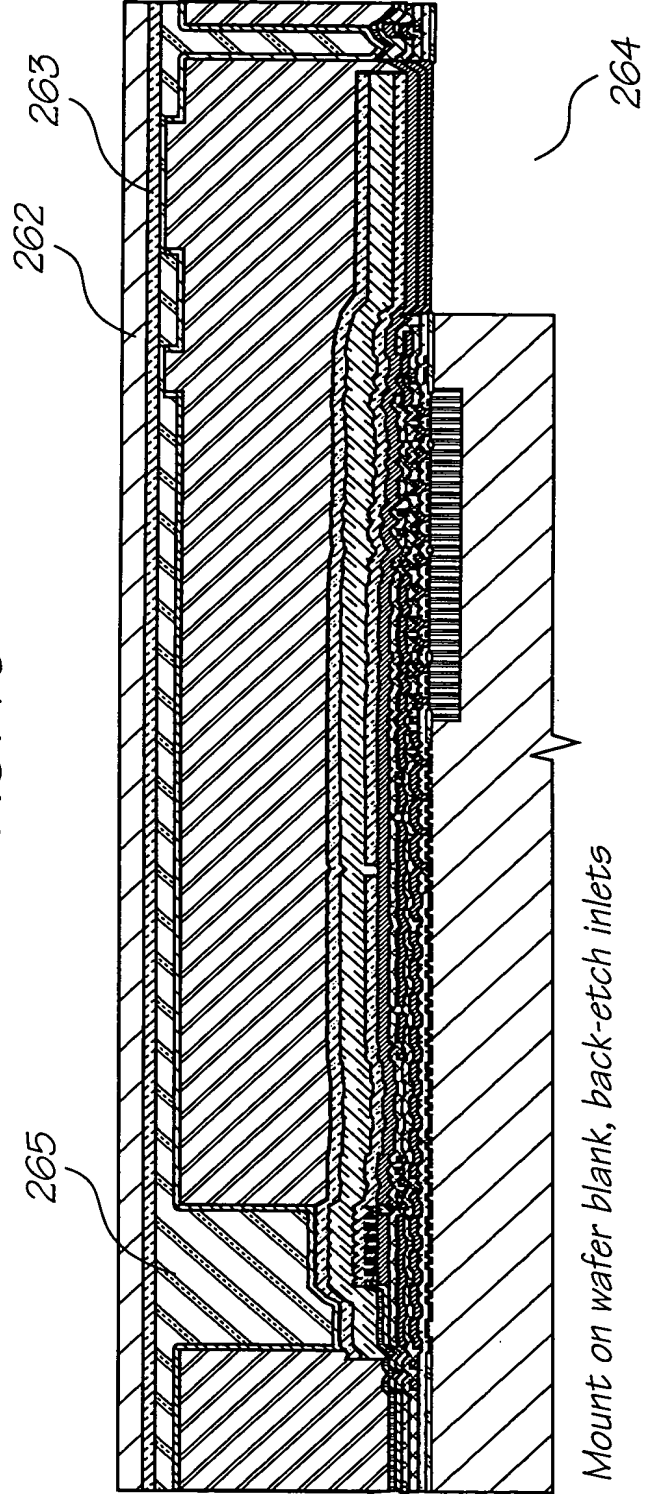


FIG. 68



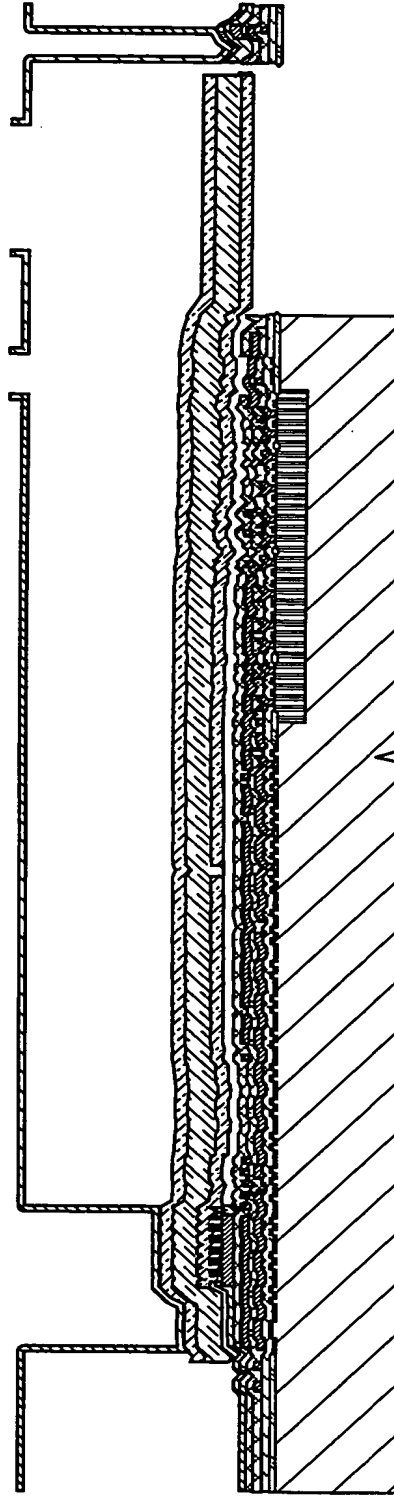
Back-etch inlet mask

FIG. 70



Mount on wafer blank, back-etch inlets

FIG. 69



Detach from wafer blank, etch sacrificial material

FIG. 71

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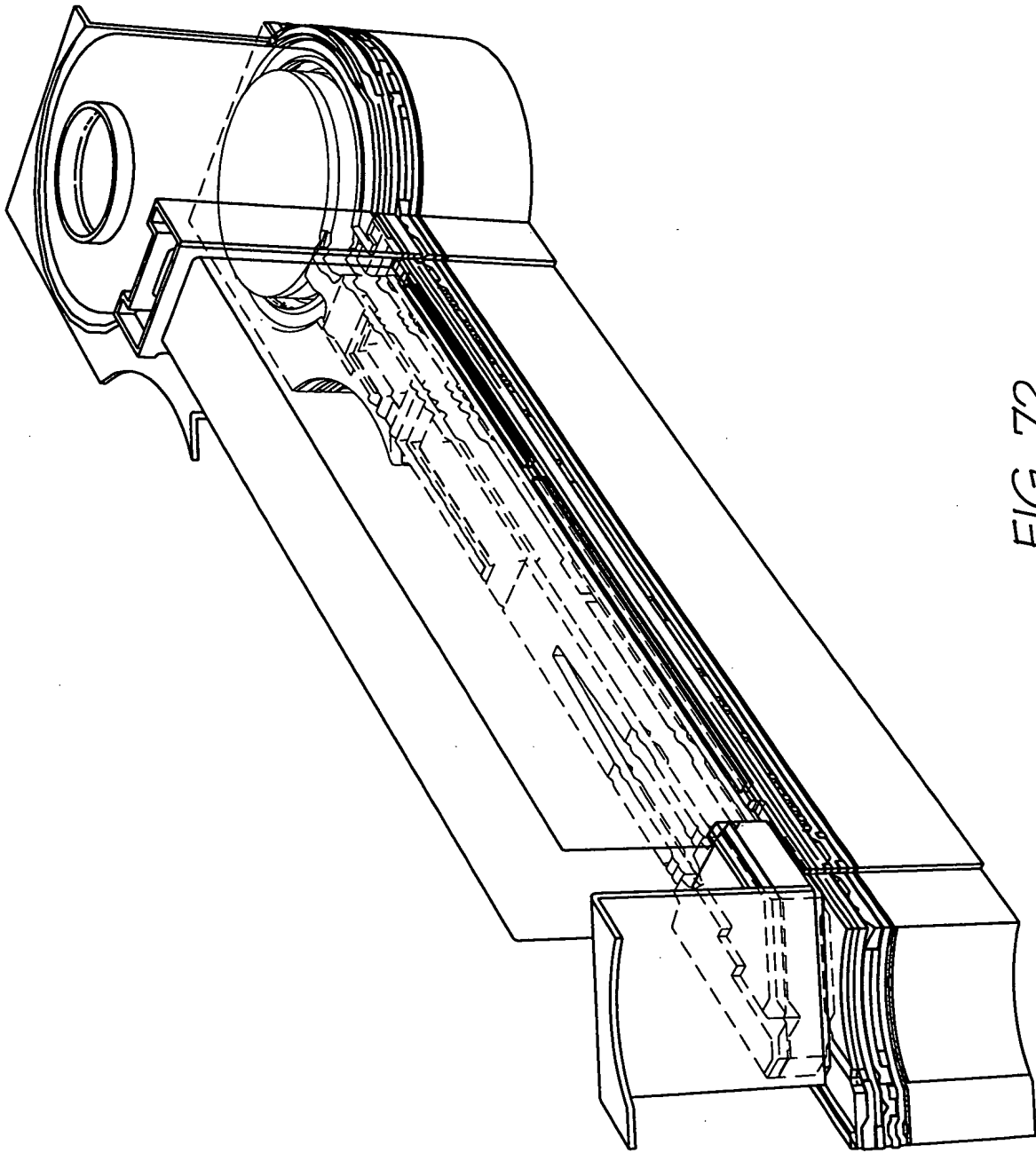


FIG. 72



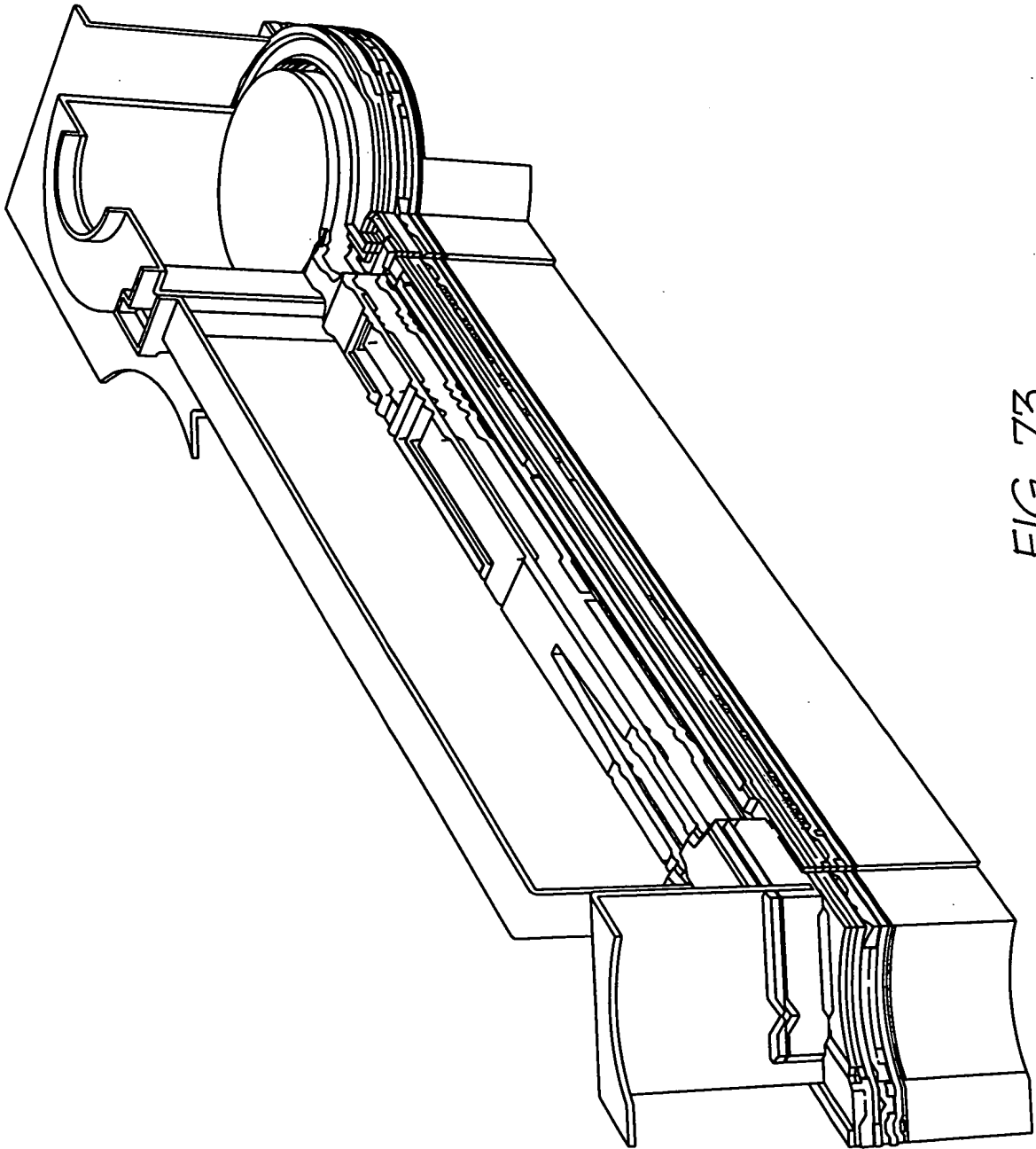


FIG. 73

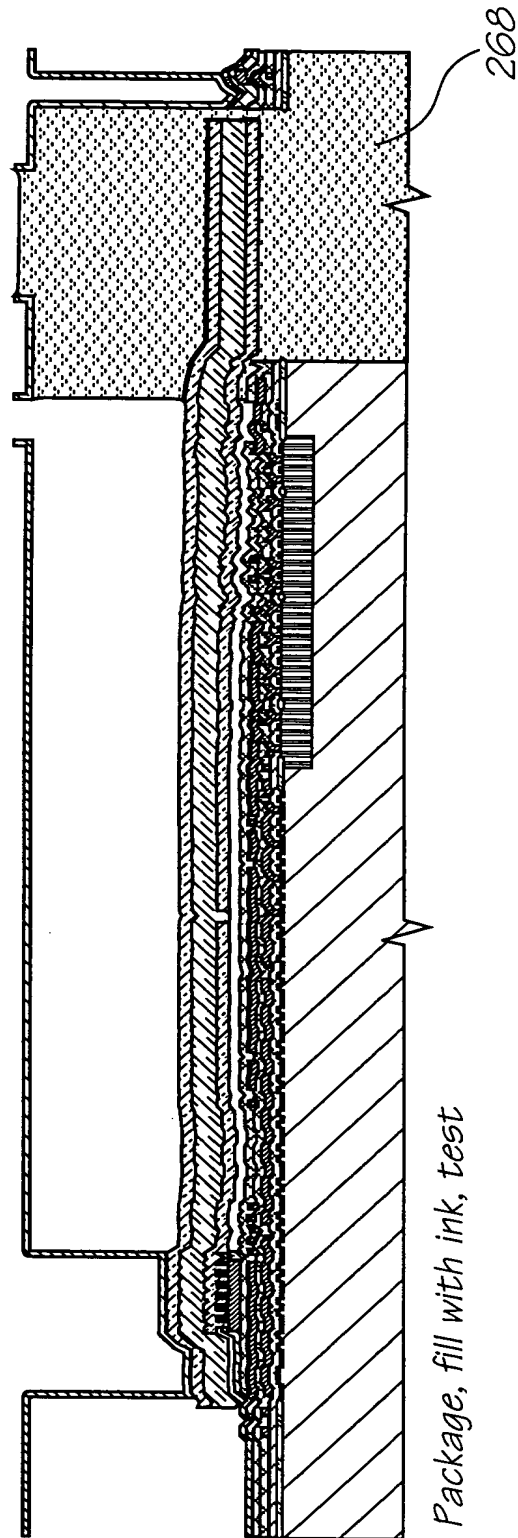


FIG. 74

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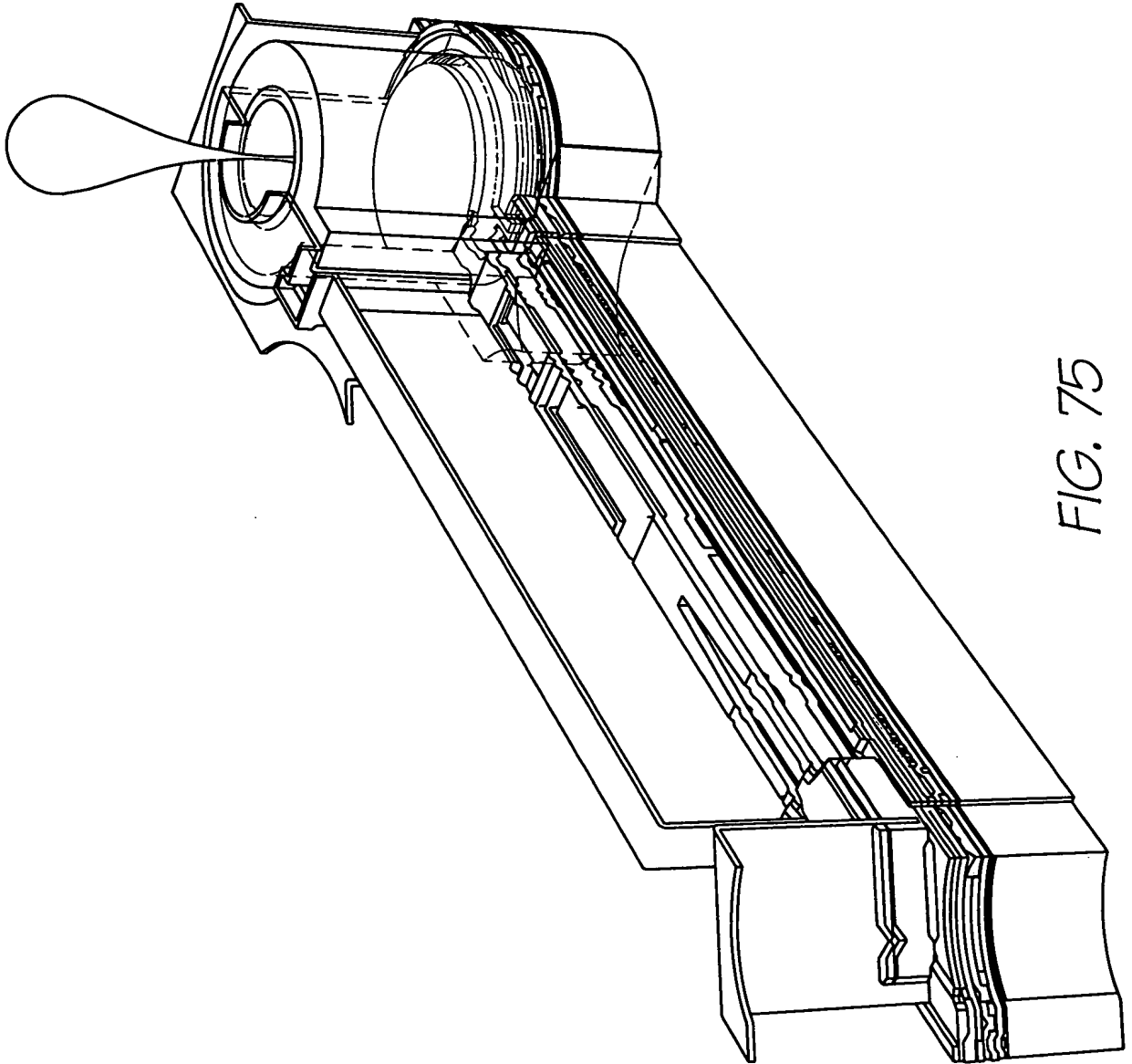


FIG. 75

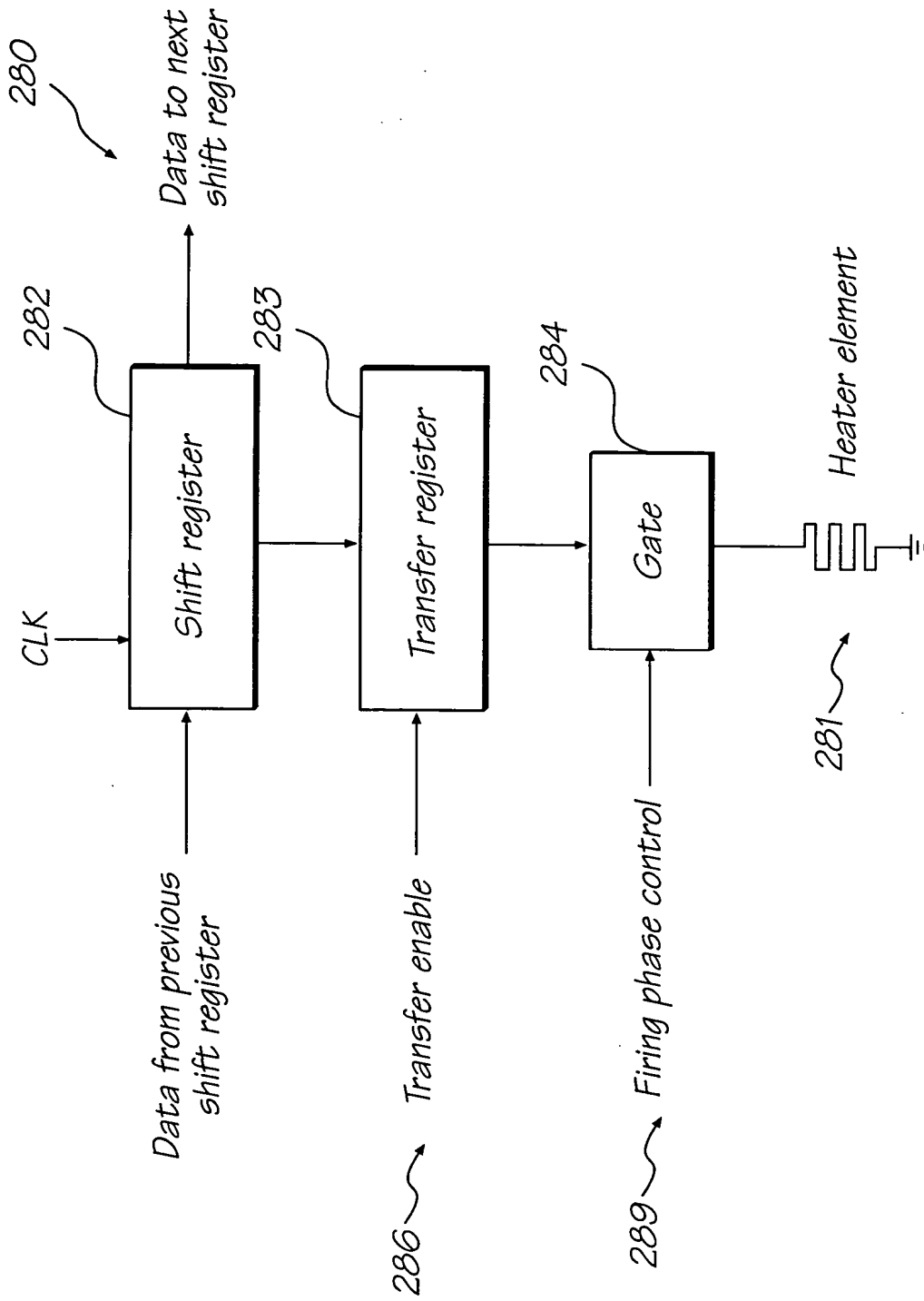


FIG. 76

FIG. 77

## Key



























	Silicon		Poly		Via 2		Actuator TiN		Cyan Ink
	Contacts		Contacts		Metal 3		Actuator Glass		Magenta Ink
	Active		Metal 1		Via 3		Compensator TiN		Yellow Ink
	p+		Via 1				Sacrificial		
	n+		Metal 2				Sacrificial-nozzle		
									Floor
									Wall
									Roof
									Rim
									Shroud

FIG. 78

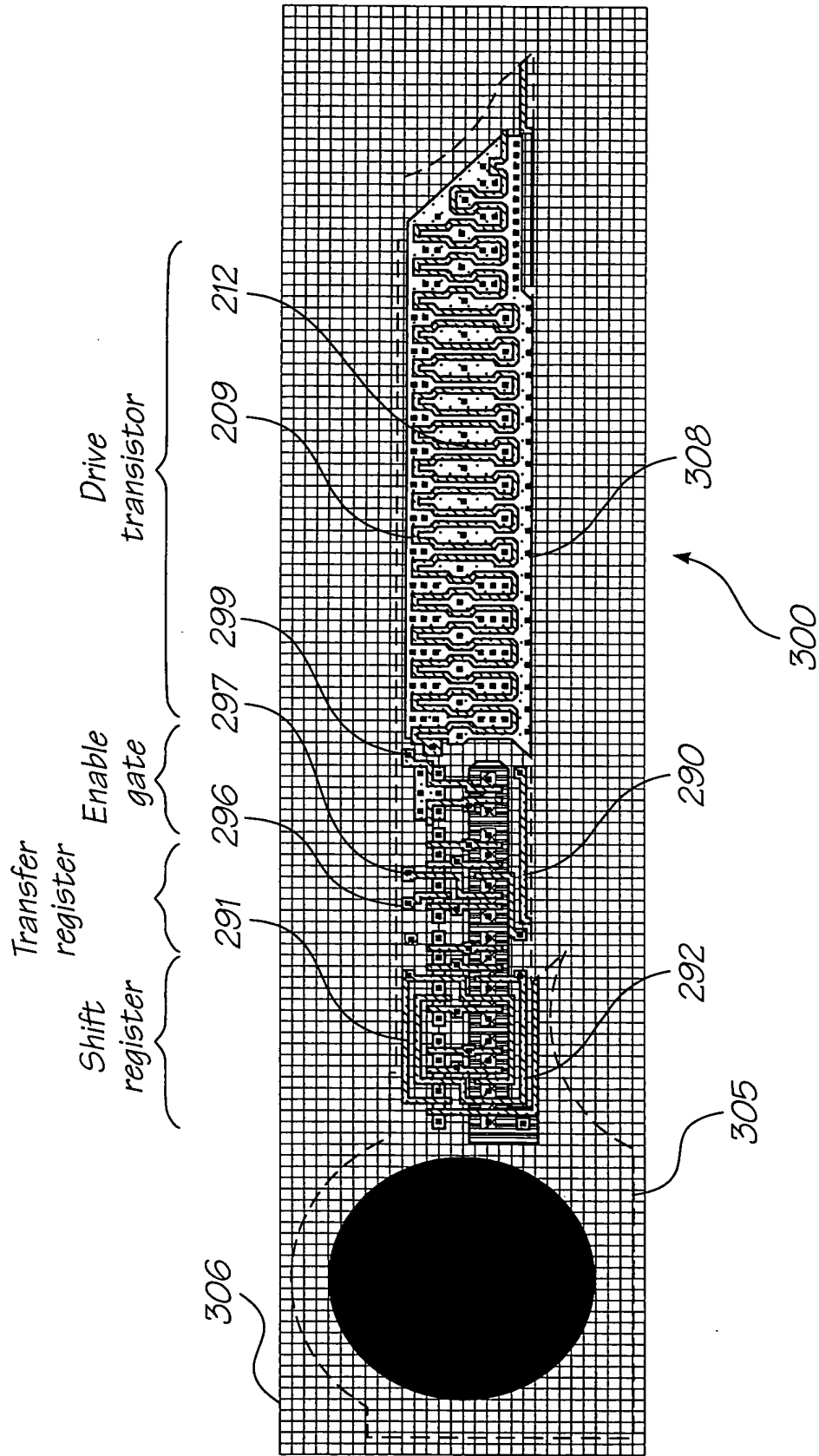


FIG. 79

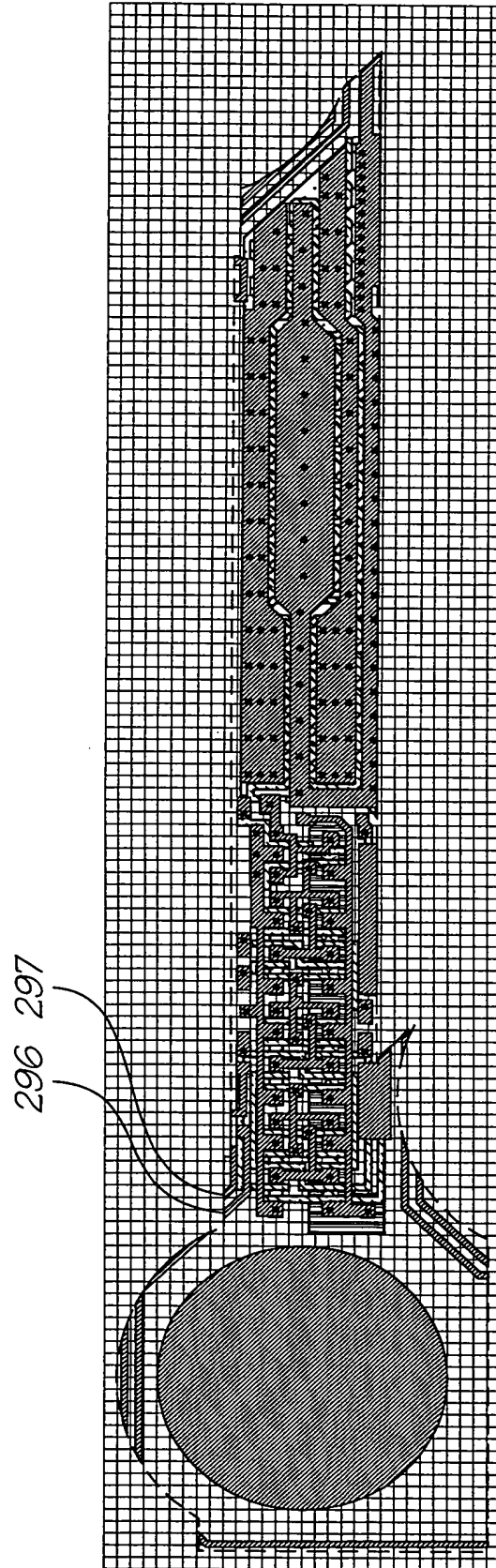


FIG. 80



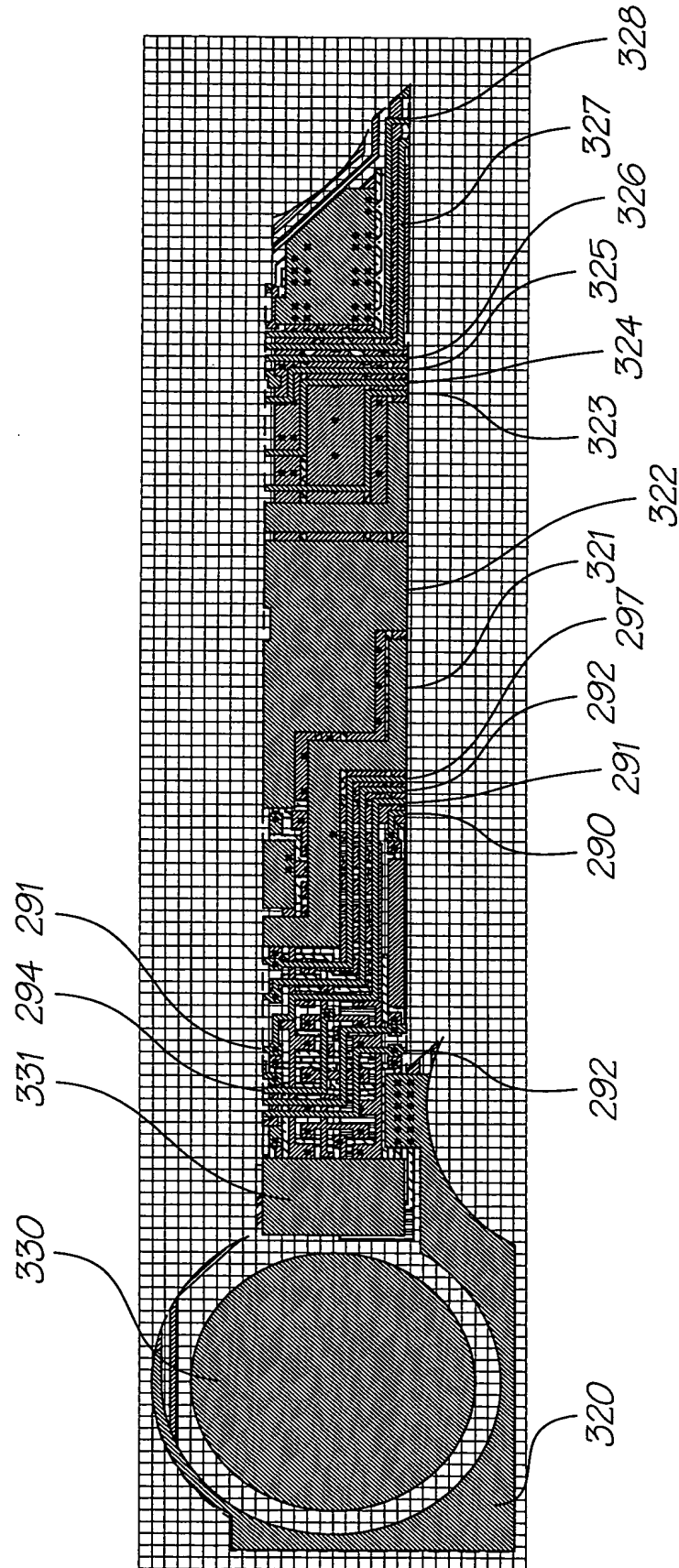


FIG. 81

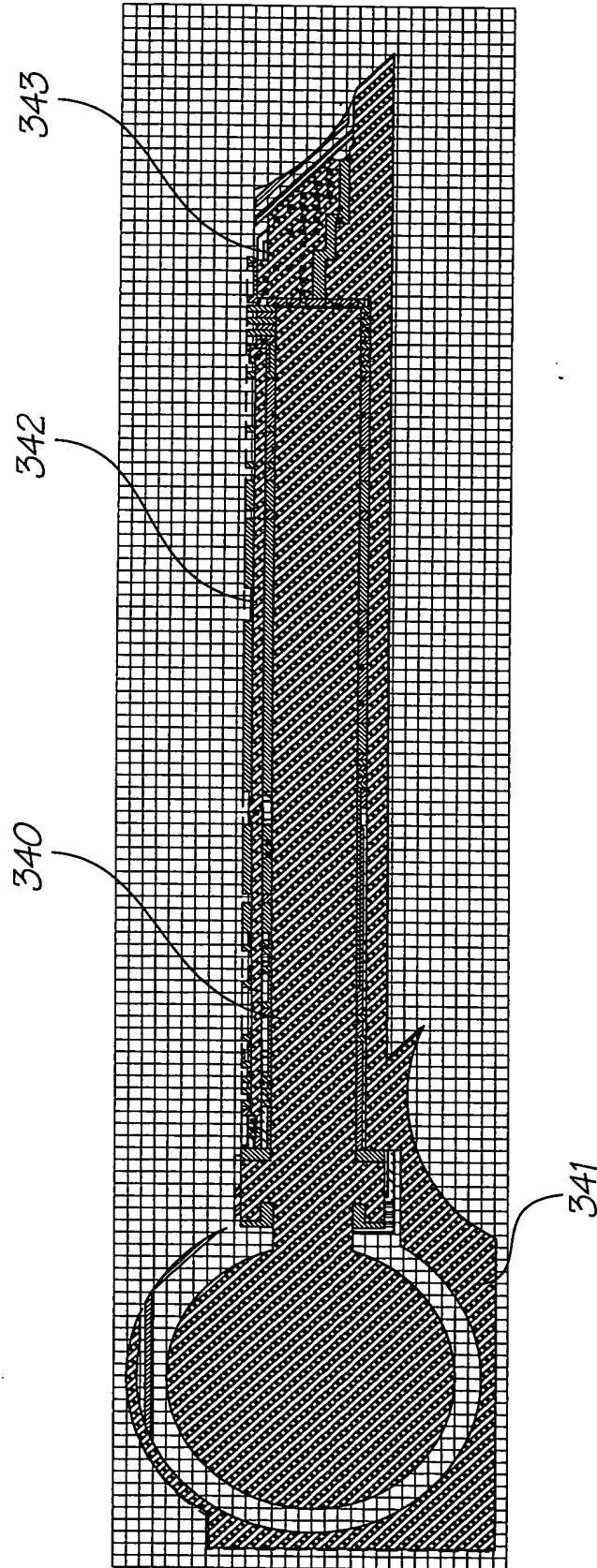


FIG. 82

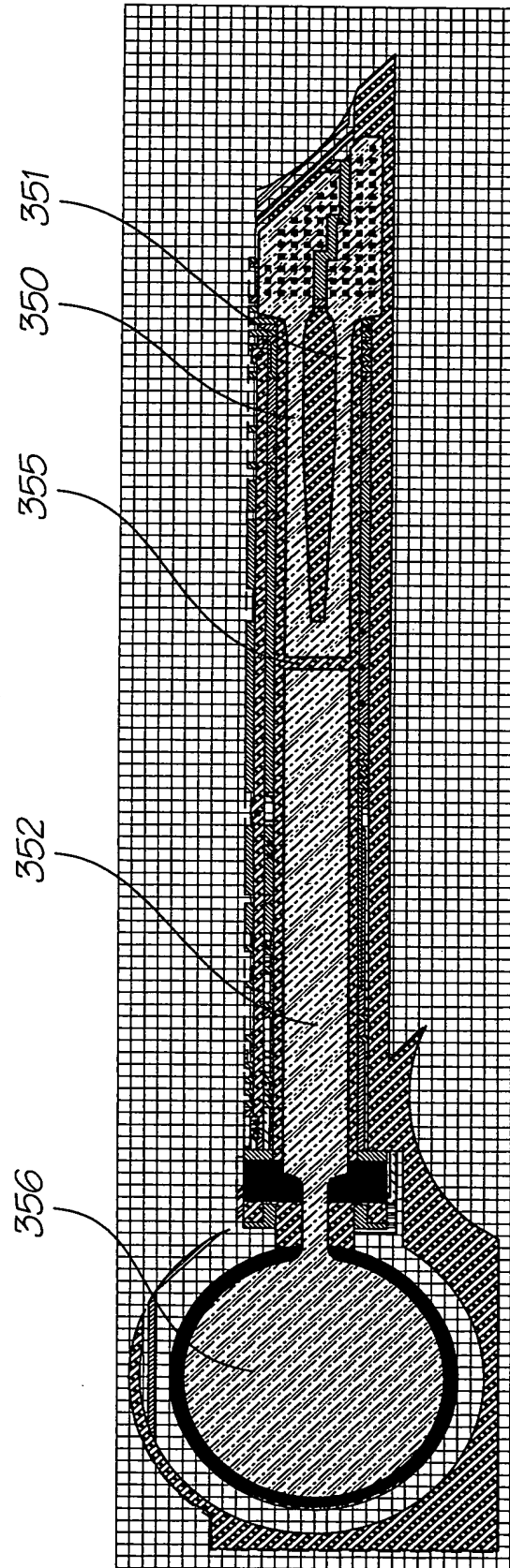


FIG. 83

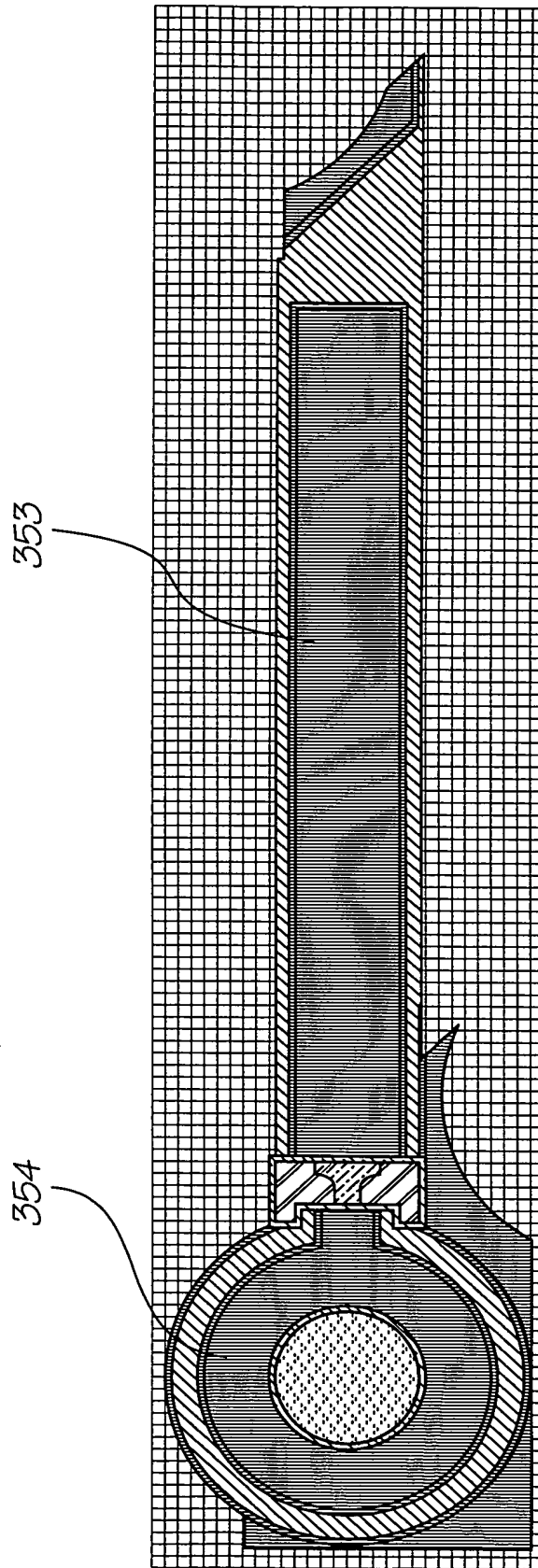


FIG. 84

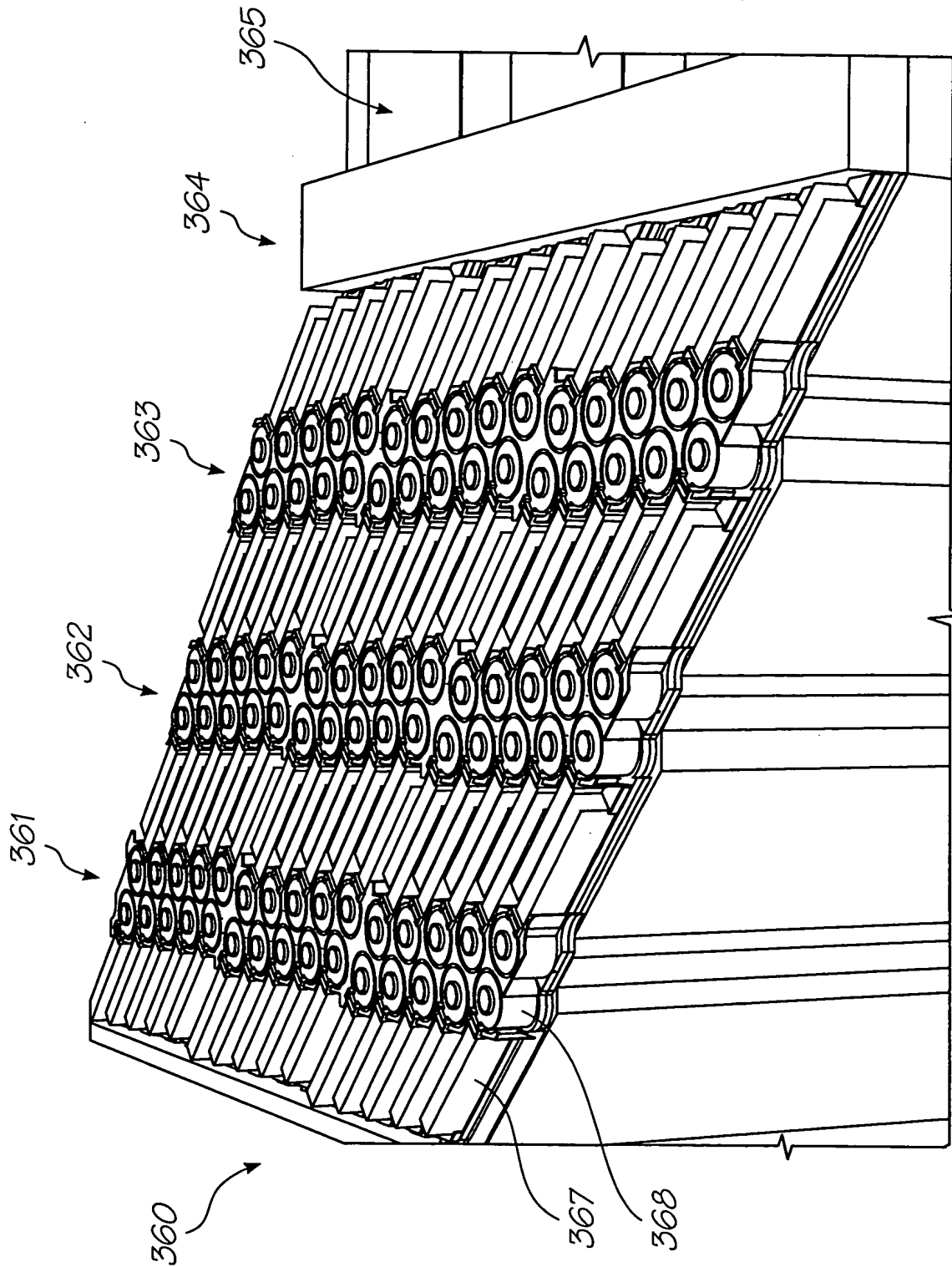


FIG. 85

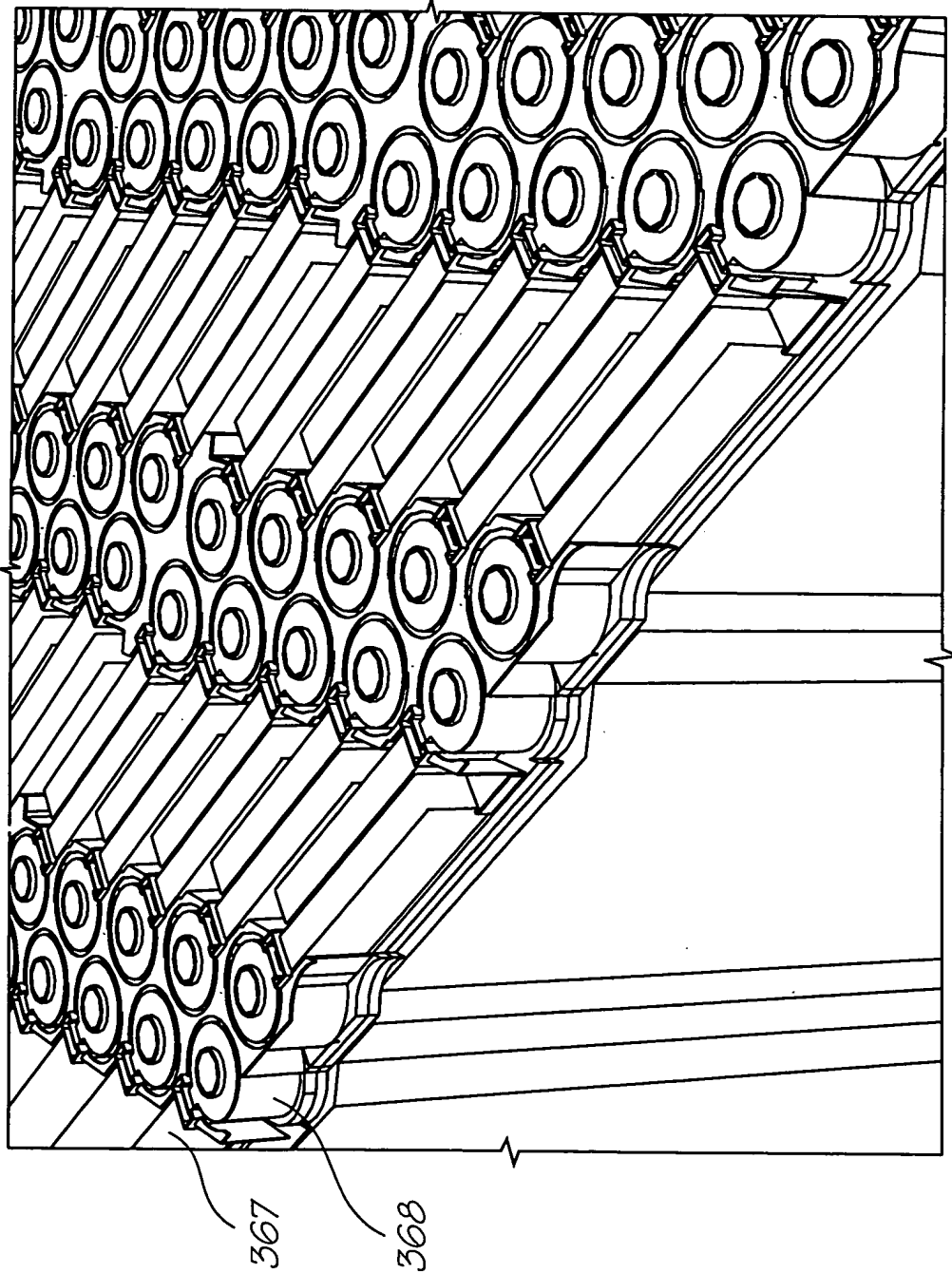


FIG. 86

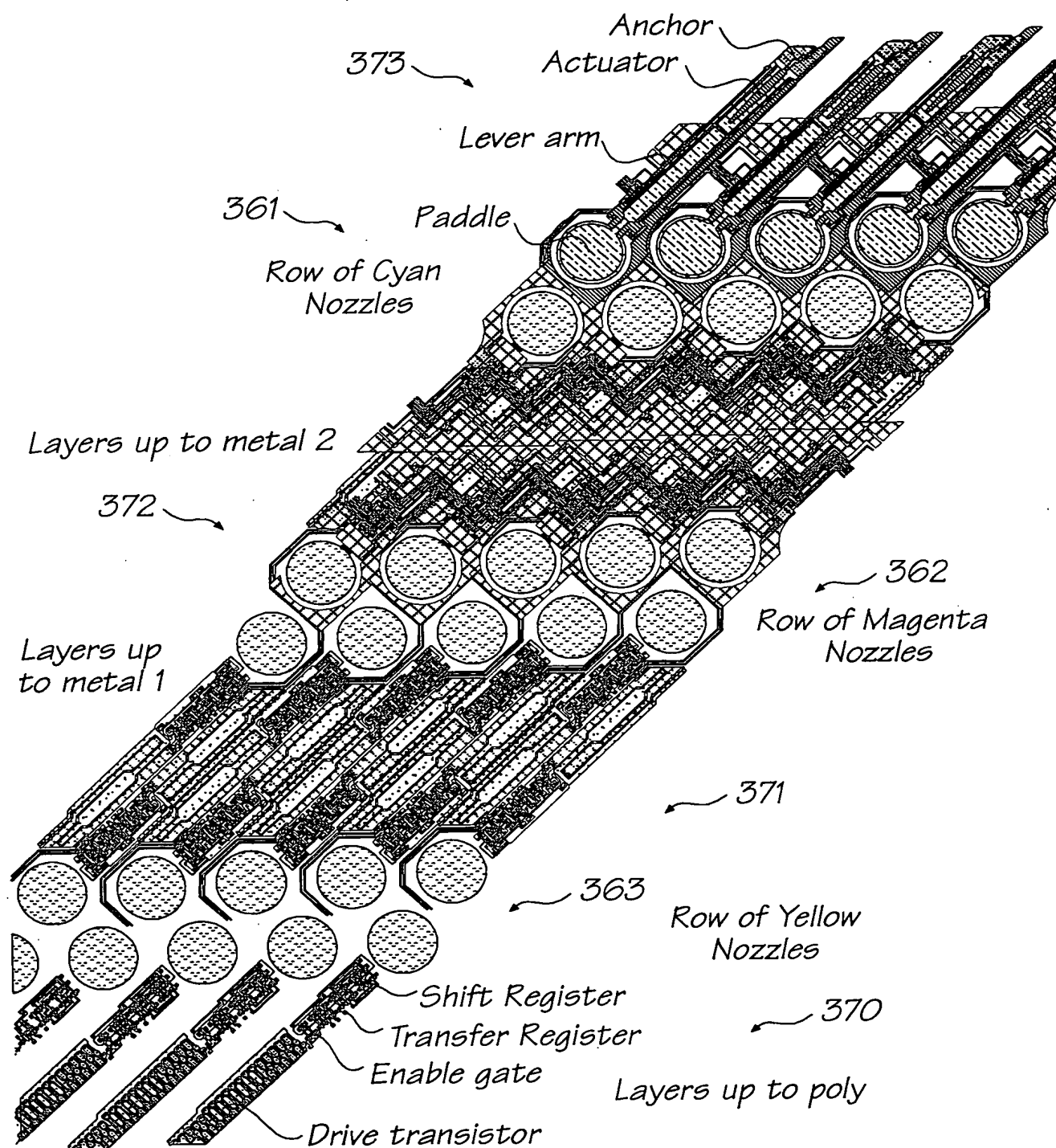


FIG. 87

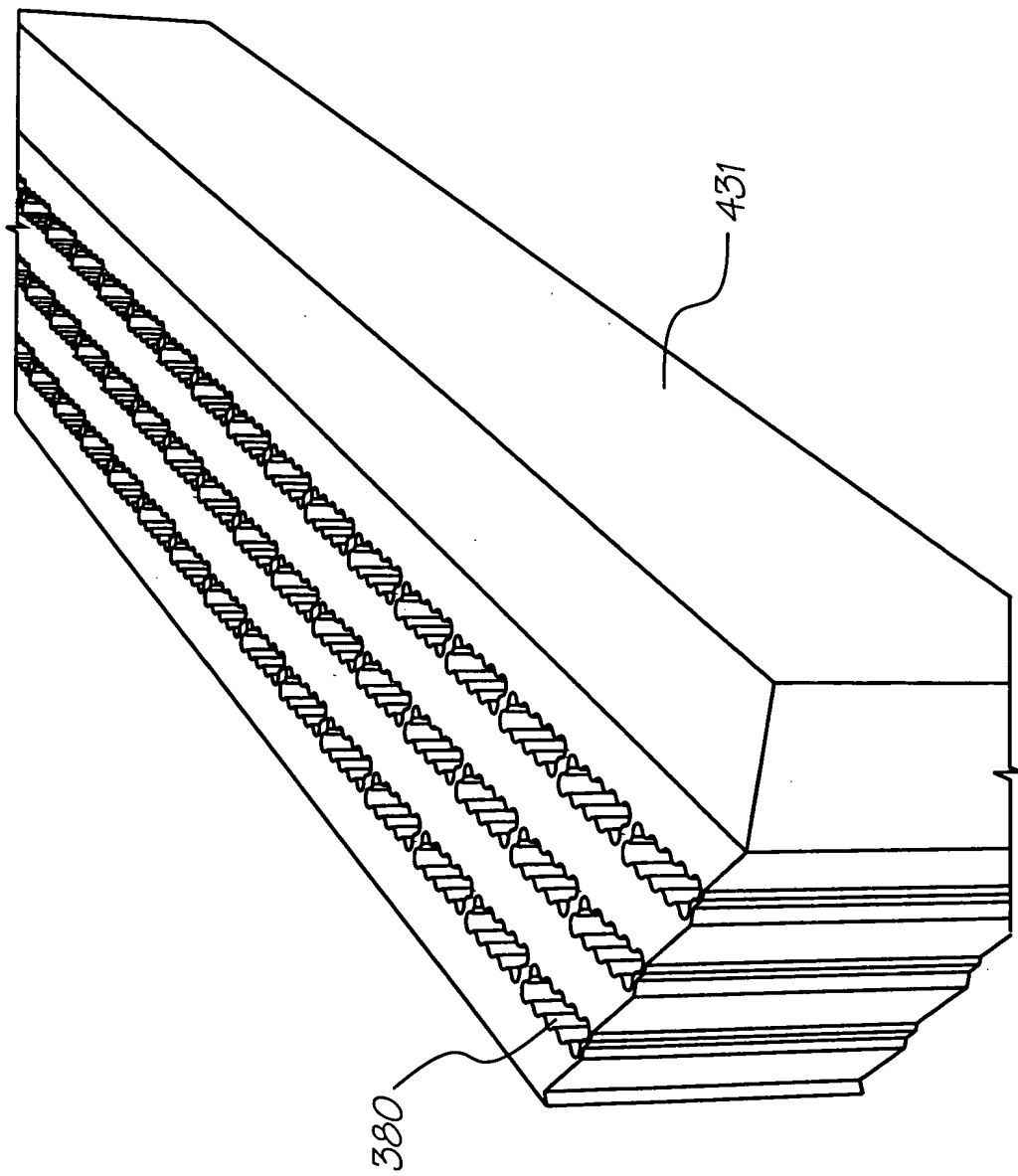


FIG. 88



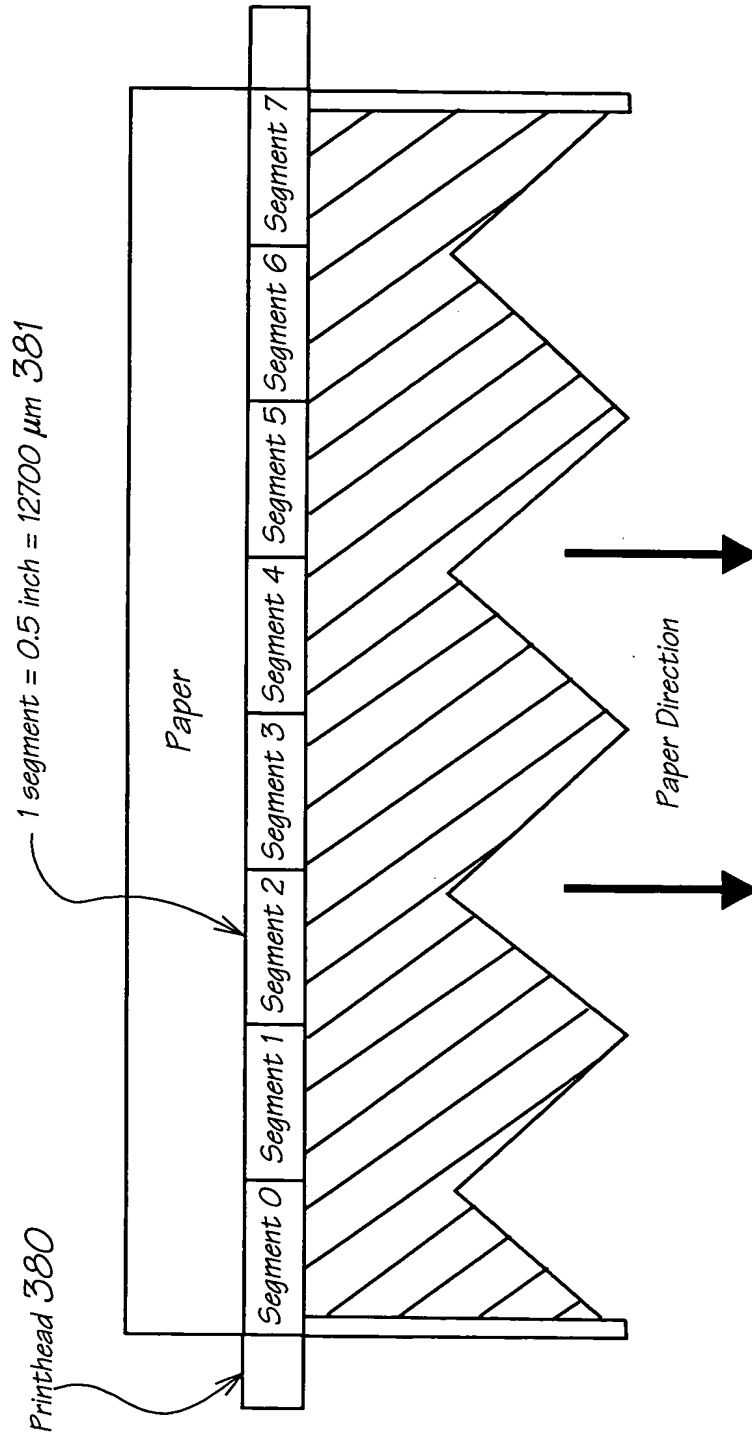
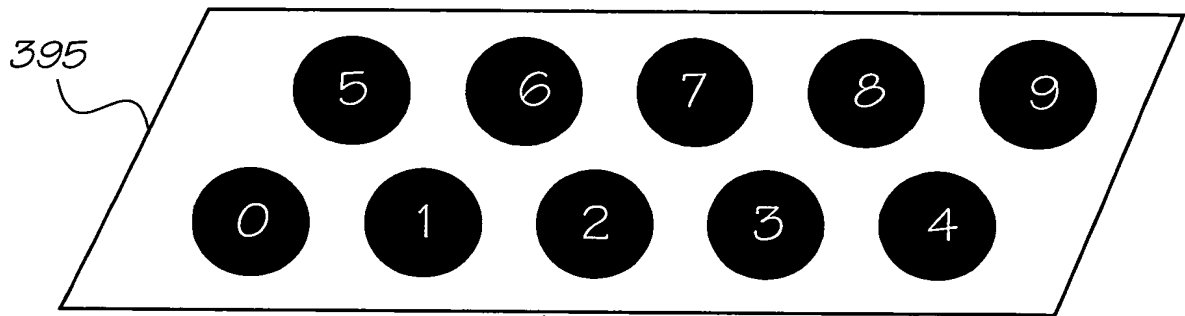


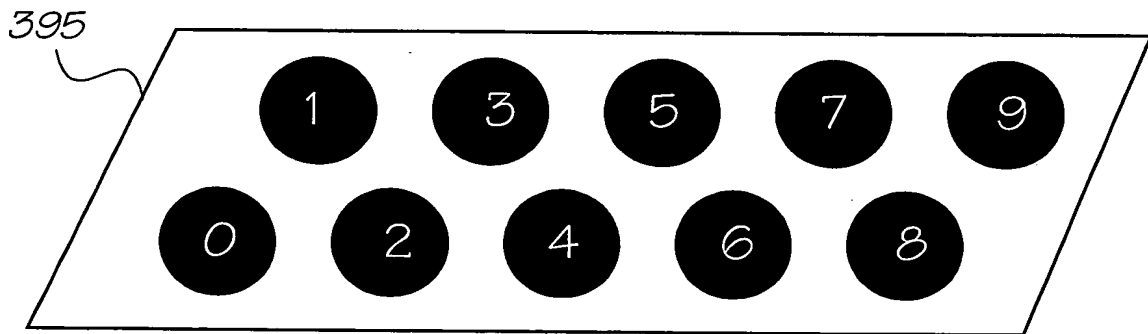
FIG. 89

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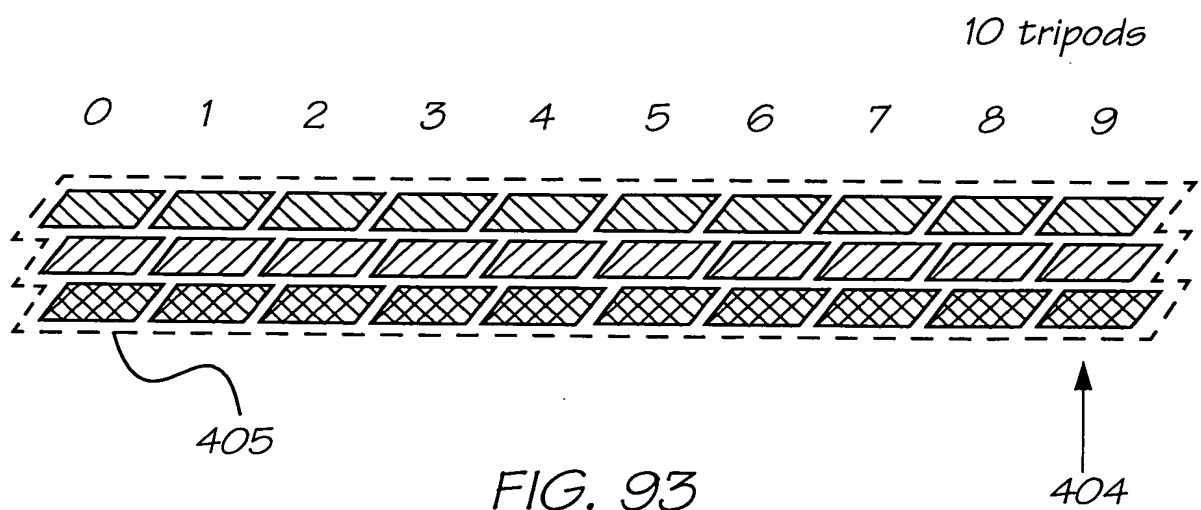


*A single pod, numbered by firing order*

*FIG. 90*



*FIG. 91*



*FIG. 93*

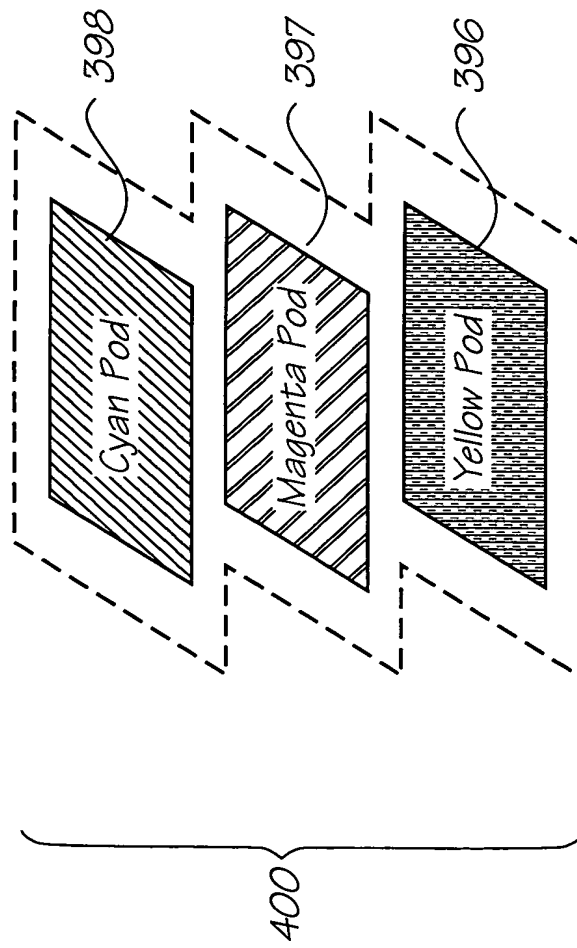


FIG. 92

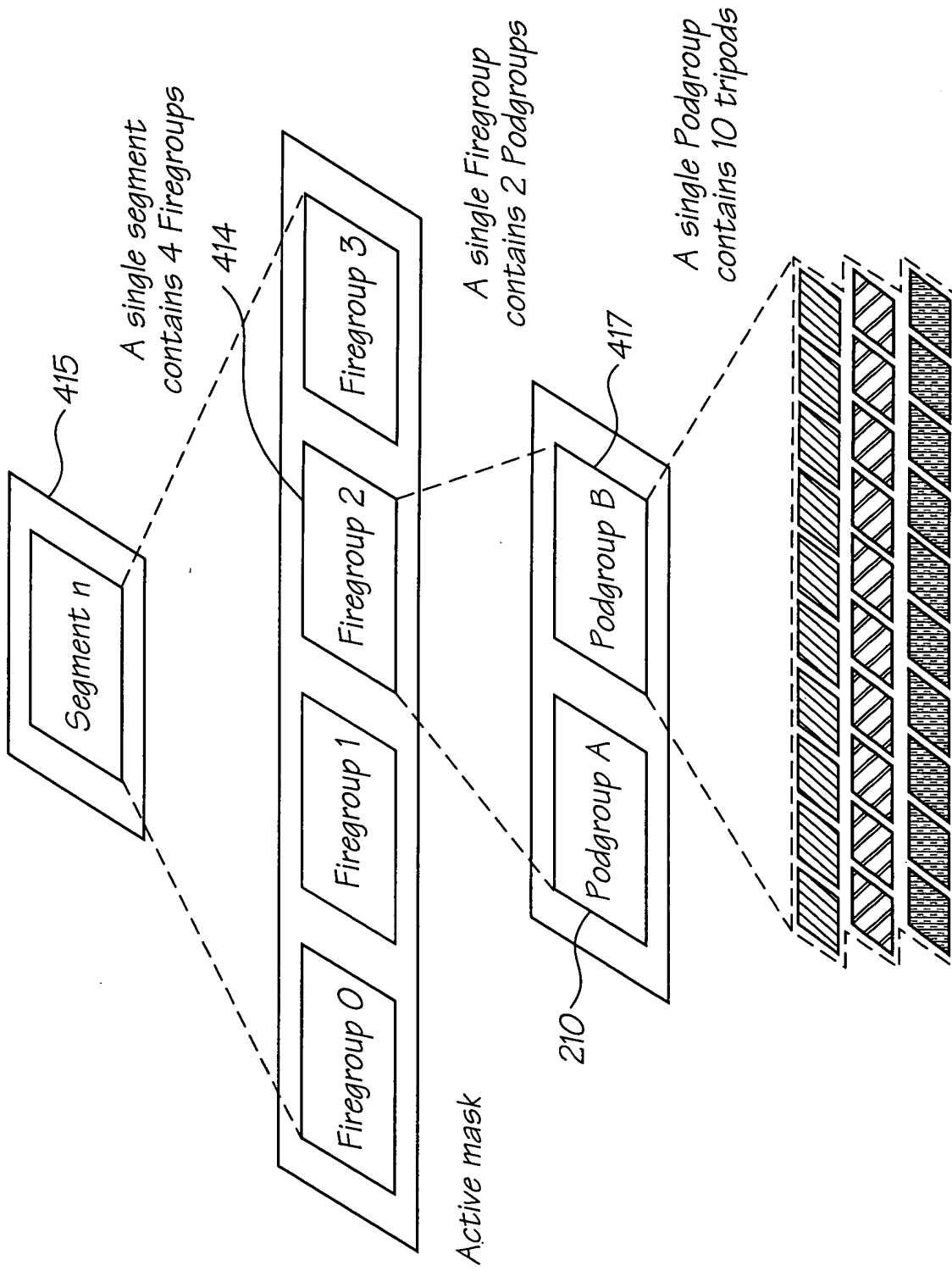


FIG. 94

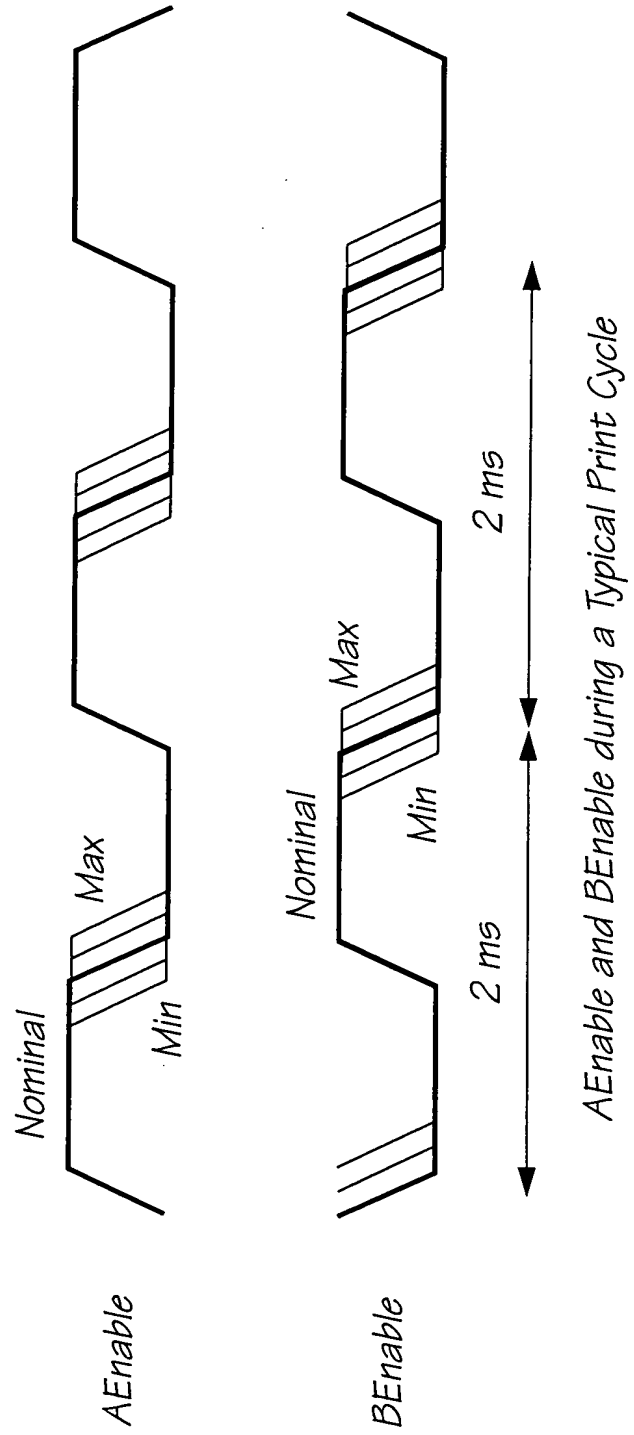


FIG. 95

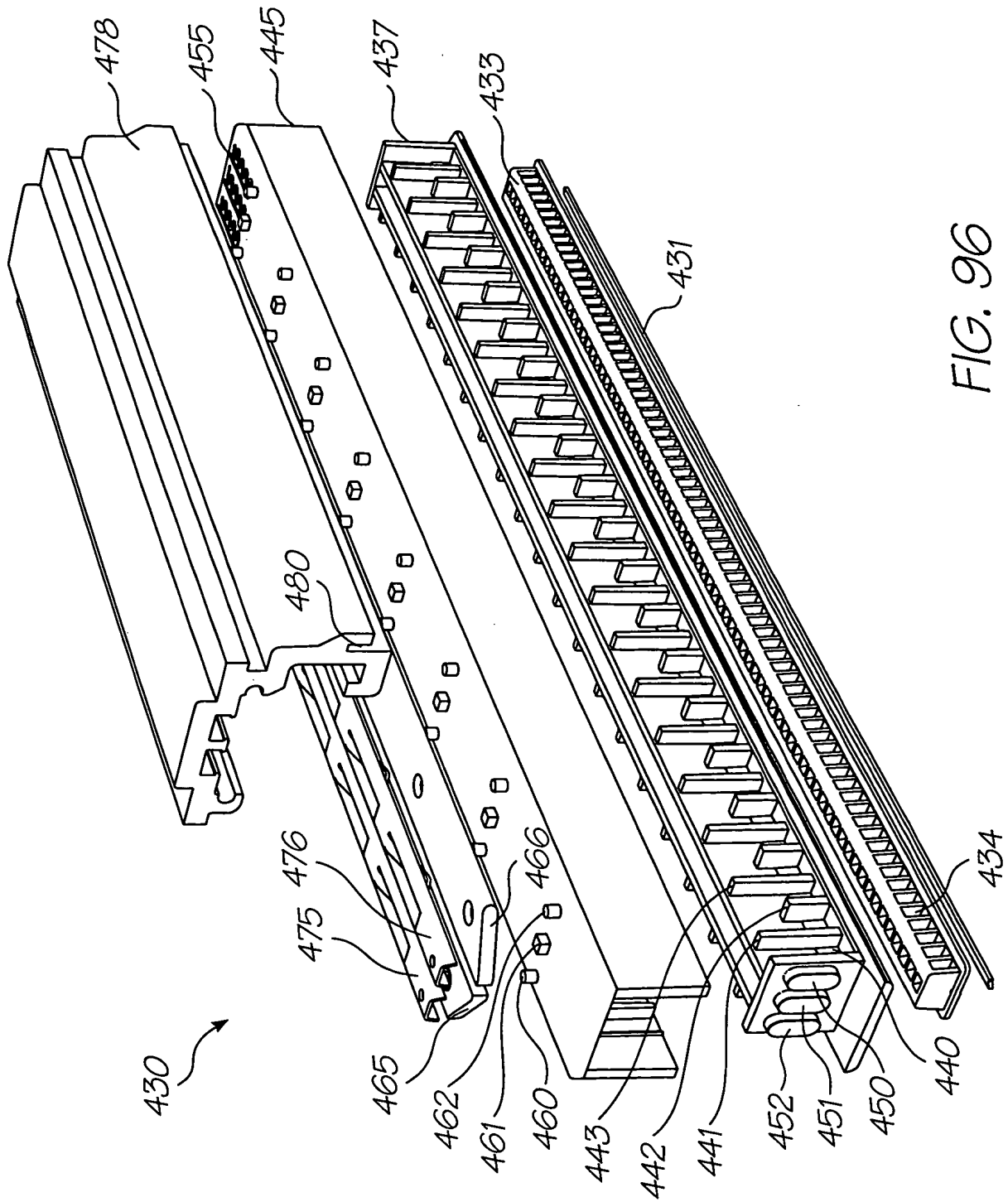


FIG. 96

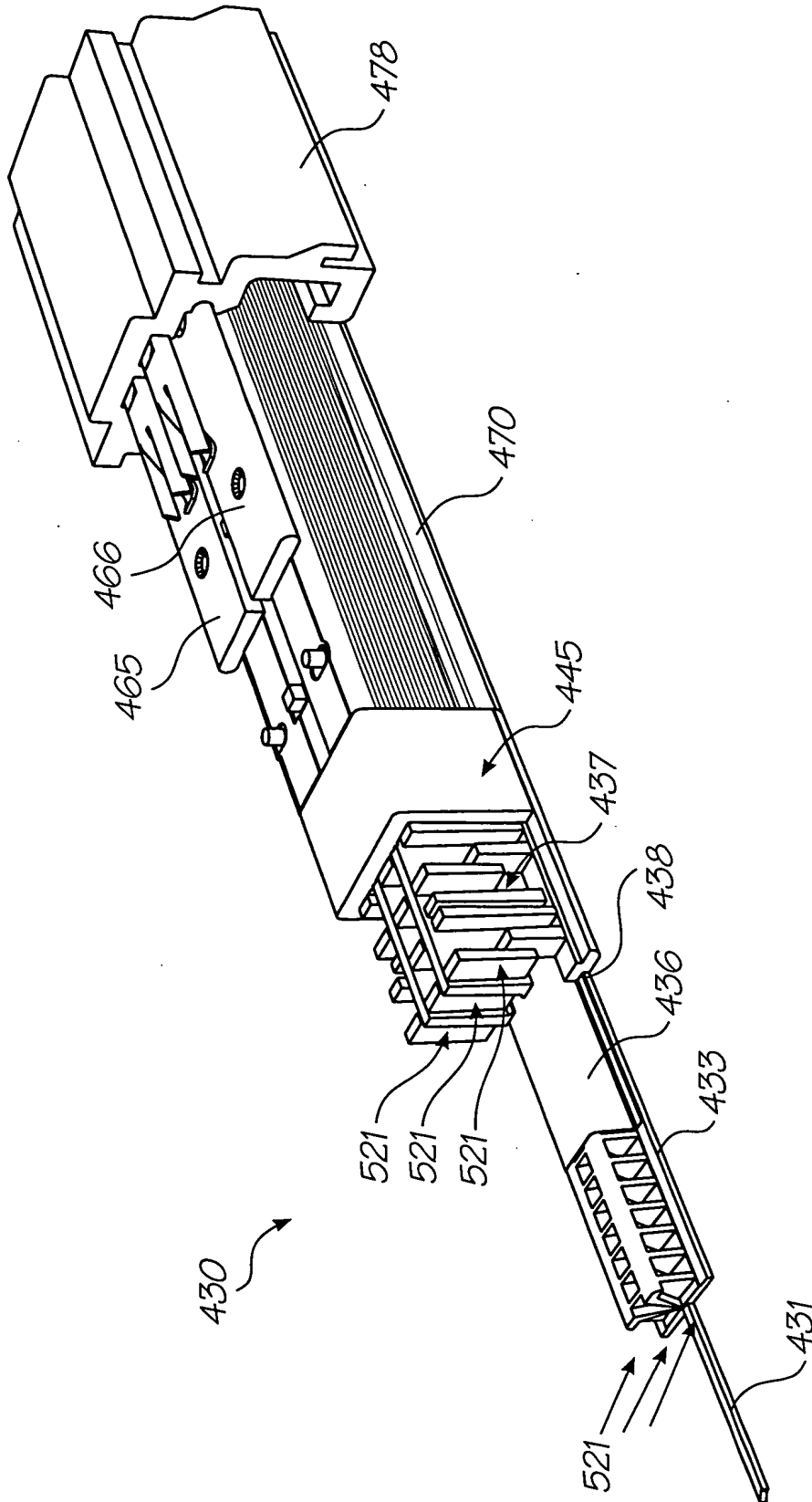


FIG. 97

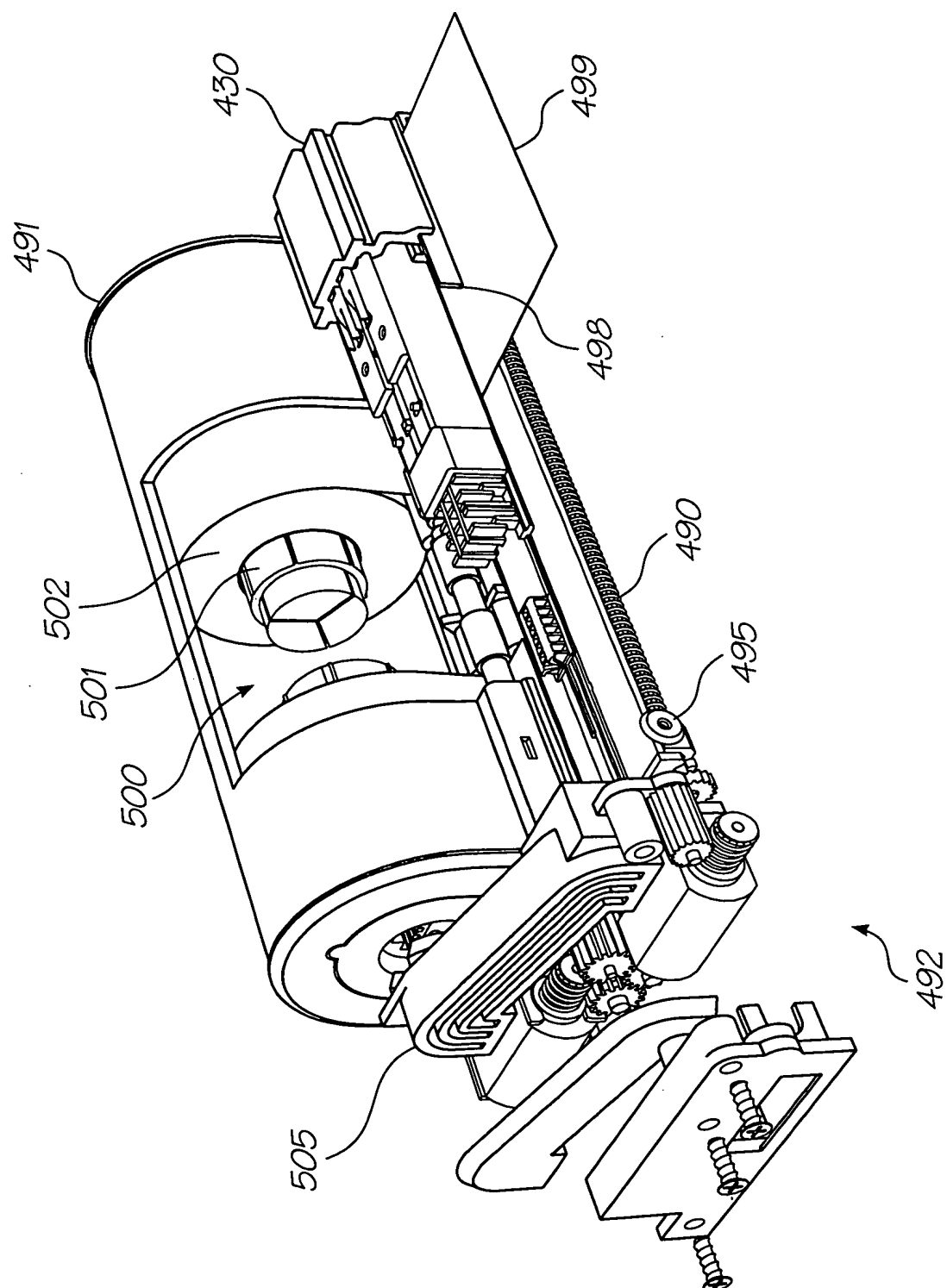


FIG. 98



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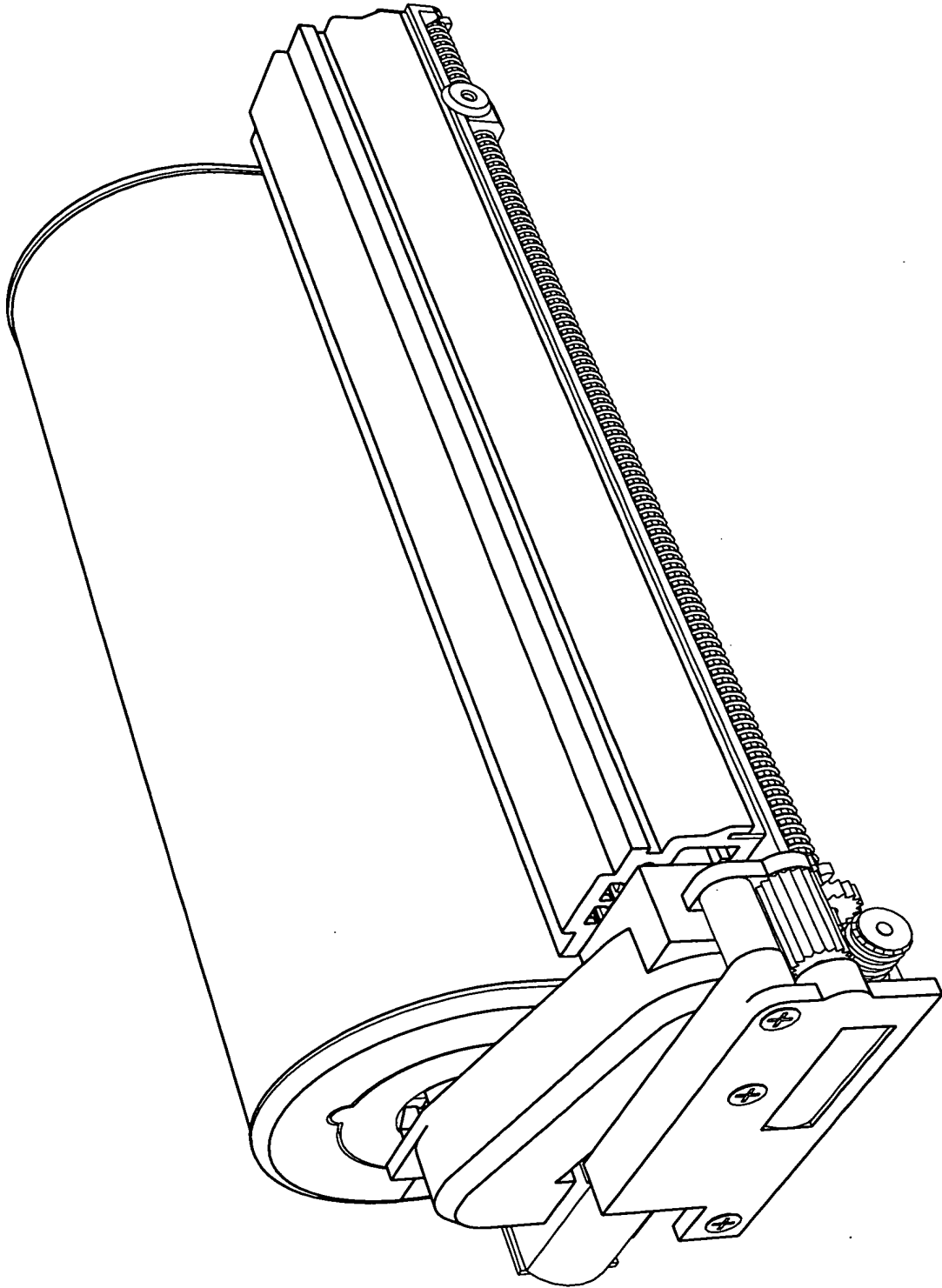


FIG. 99

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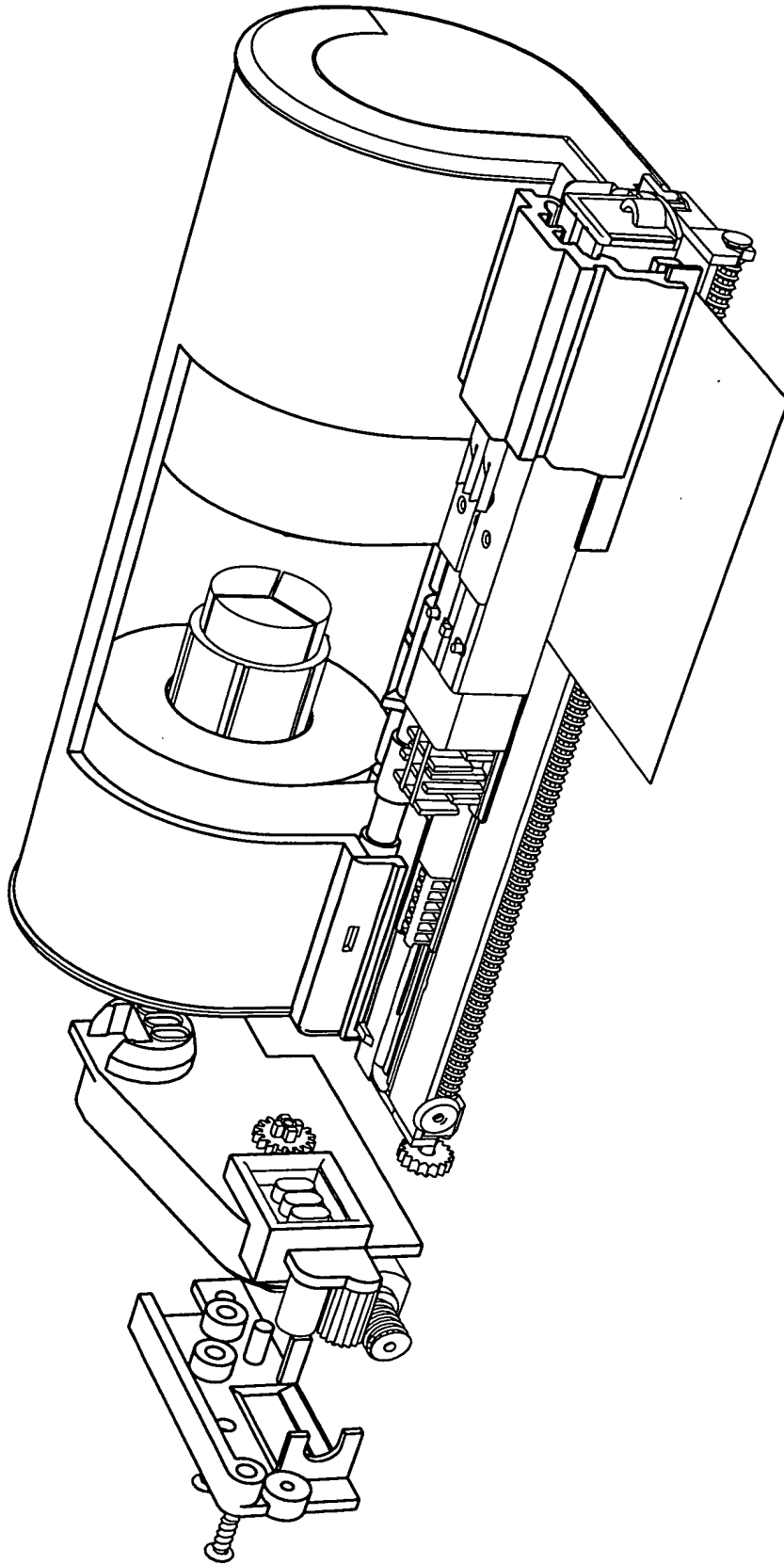


FIG. 100

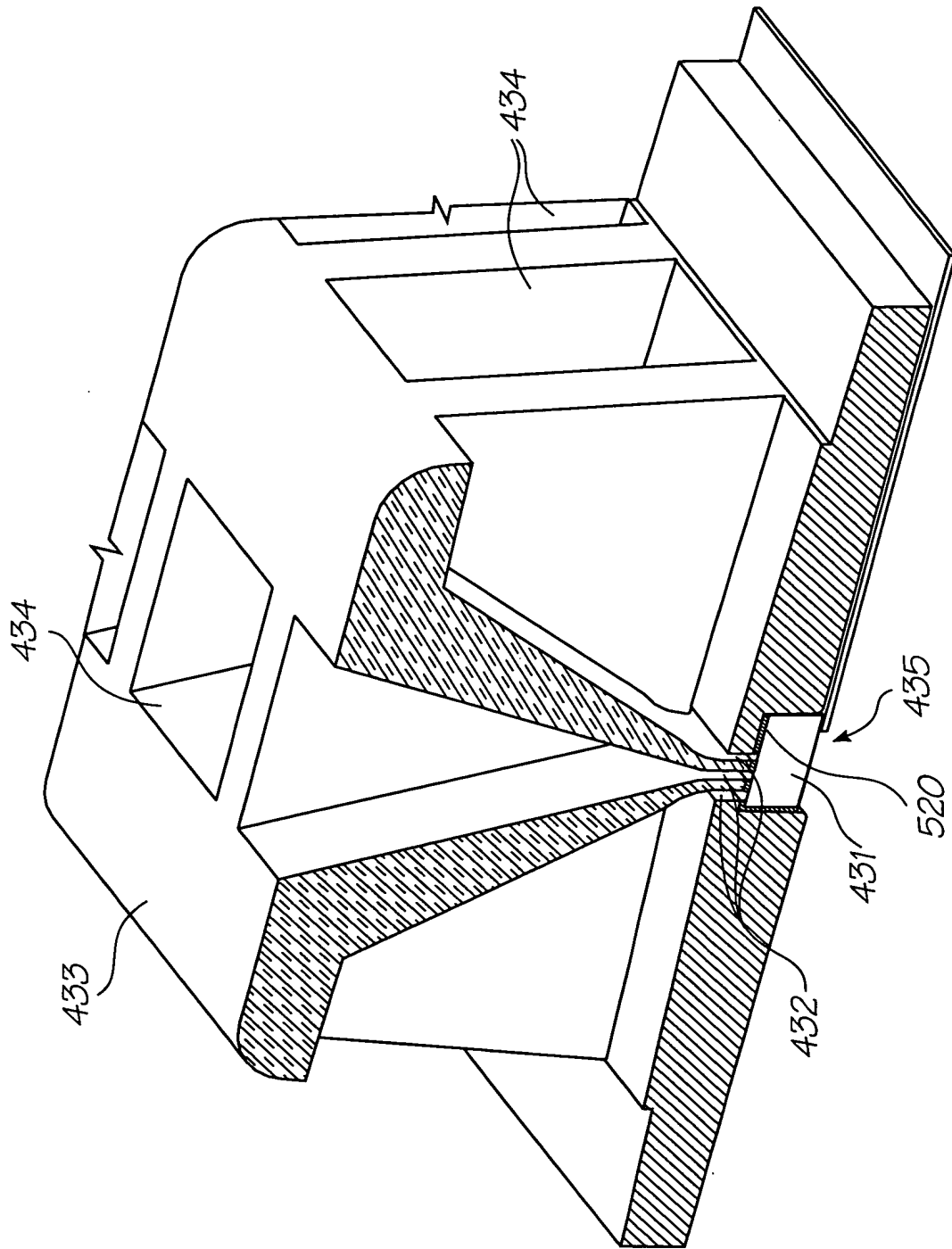


FIG. 101

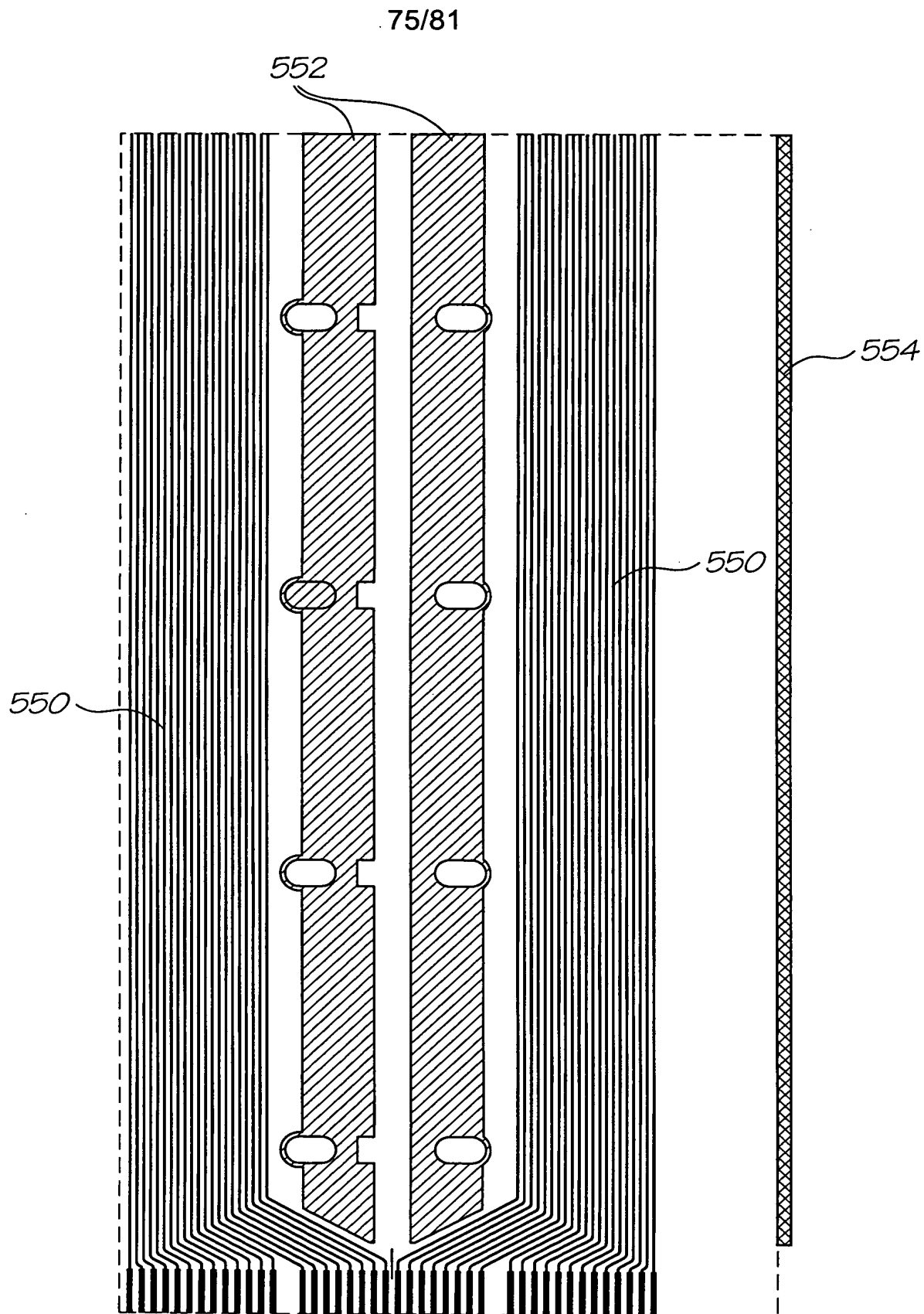


FIG. 102

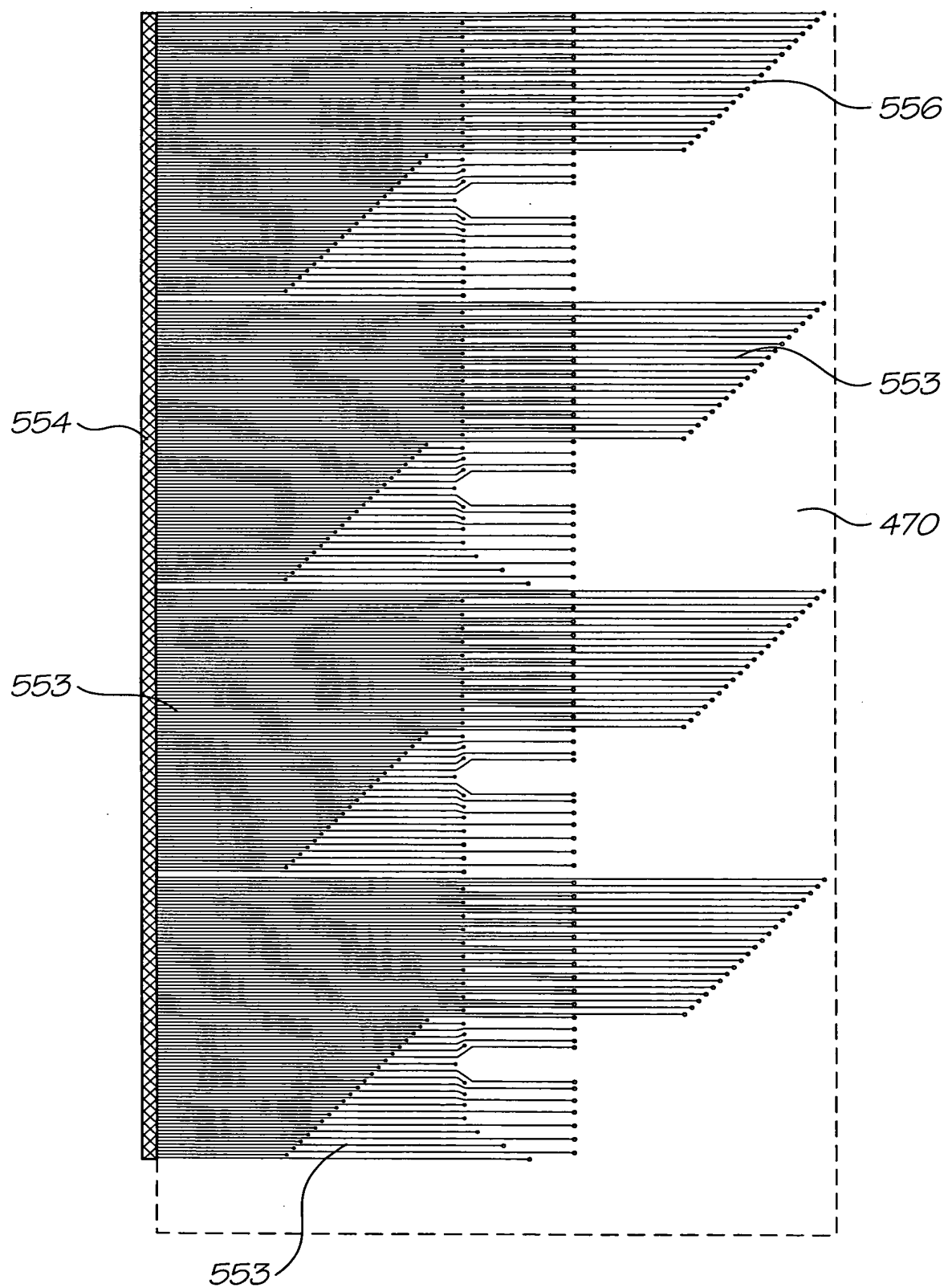


FIG. 103

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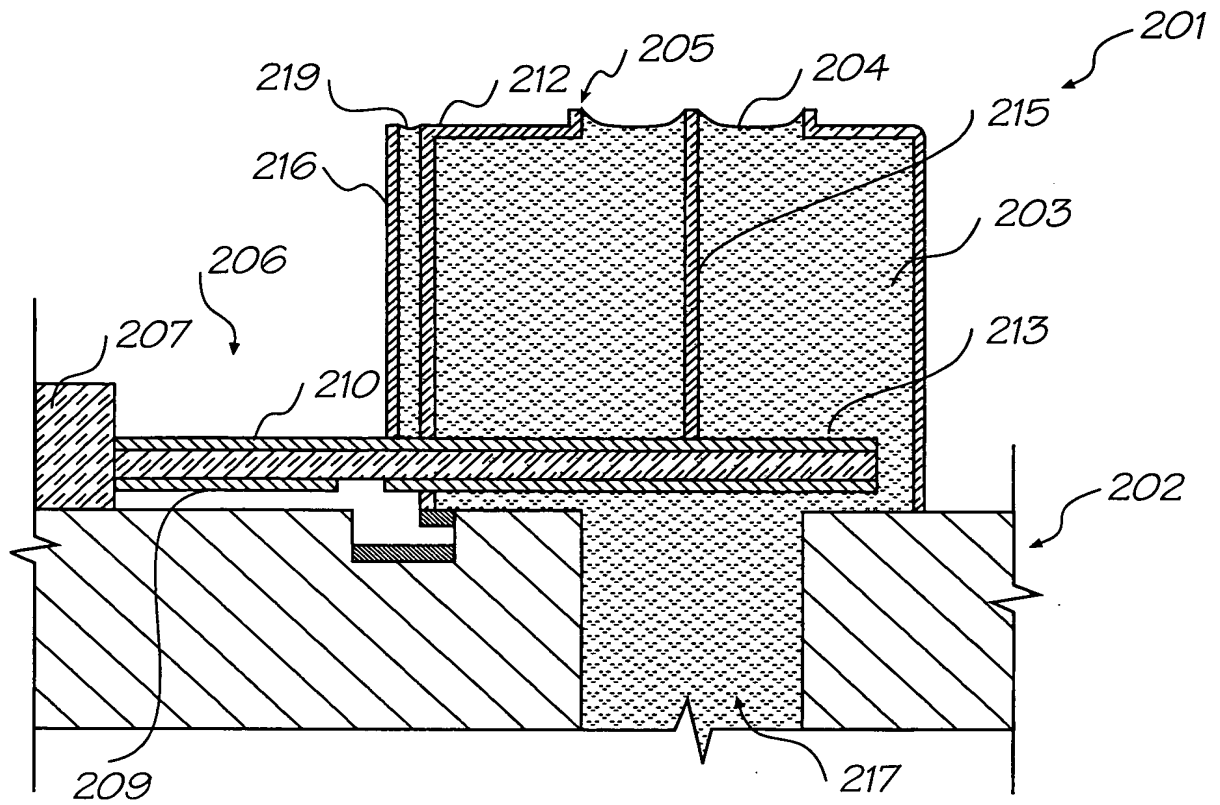


FIG. 104

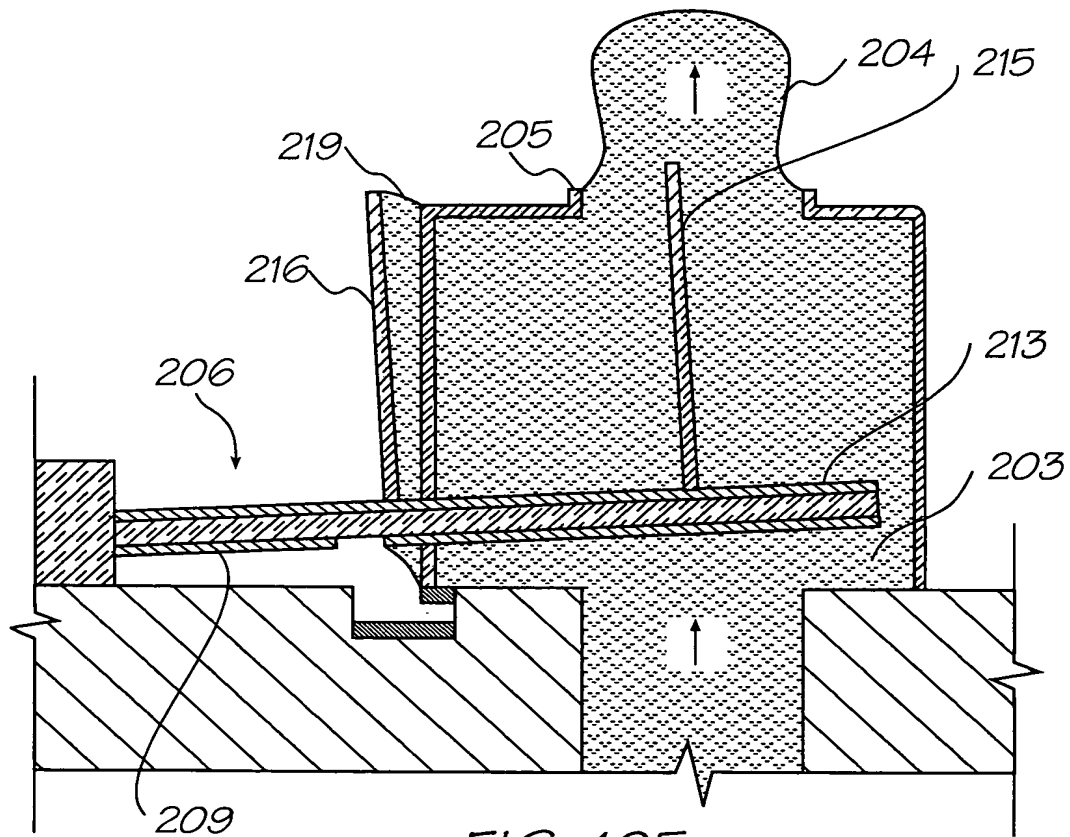


FIG. 105

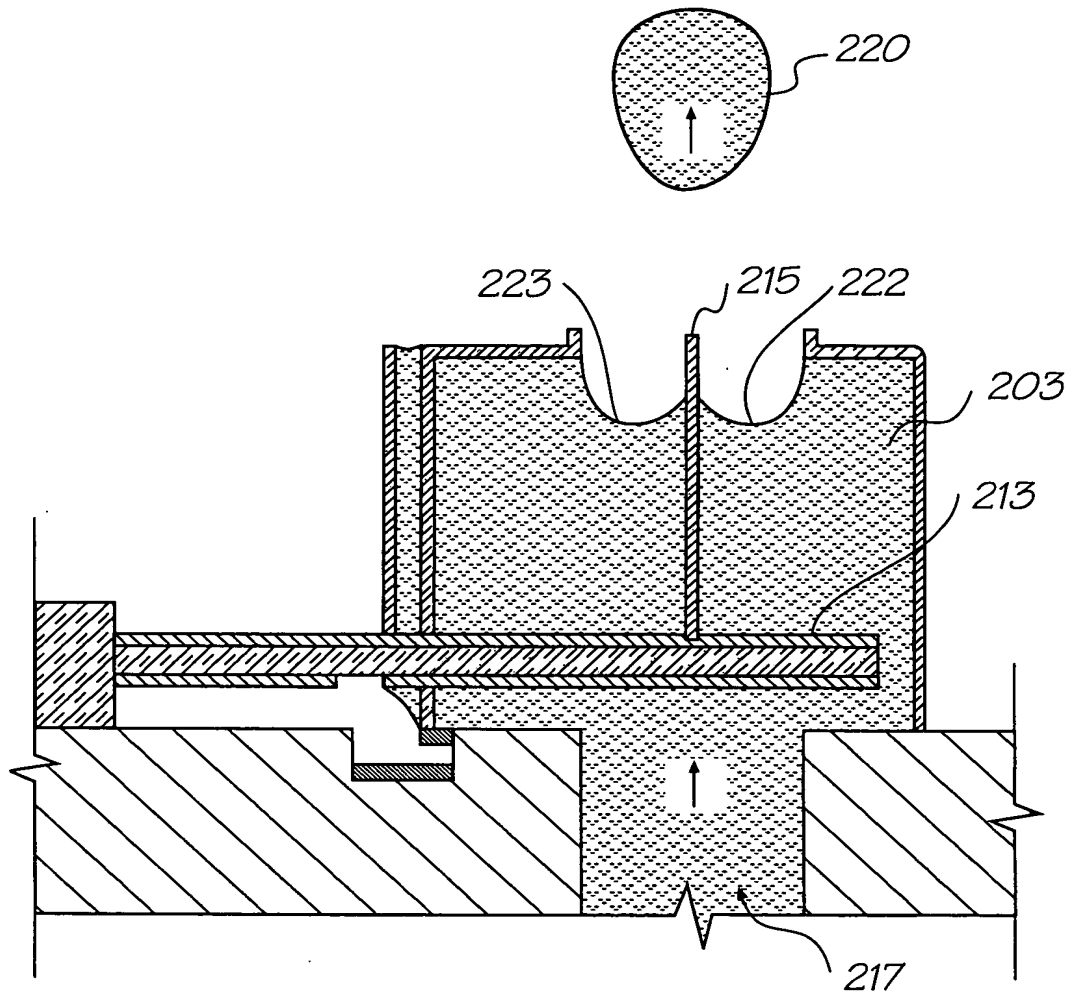


FIG. 106

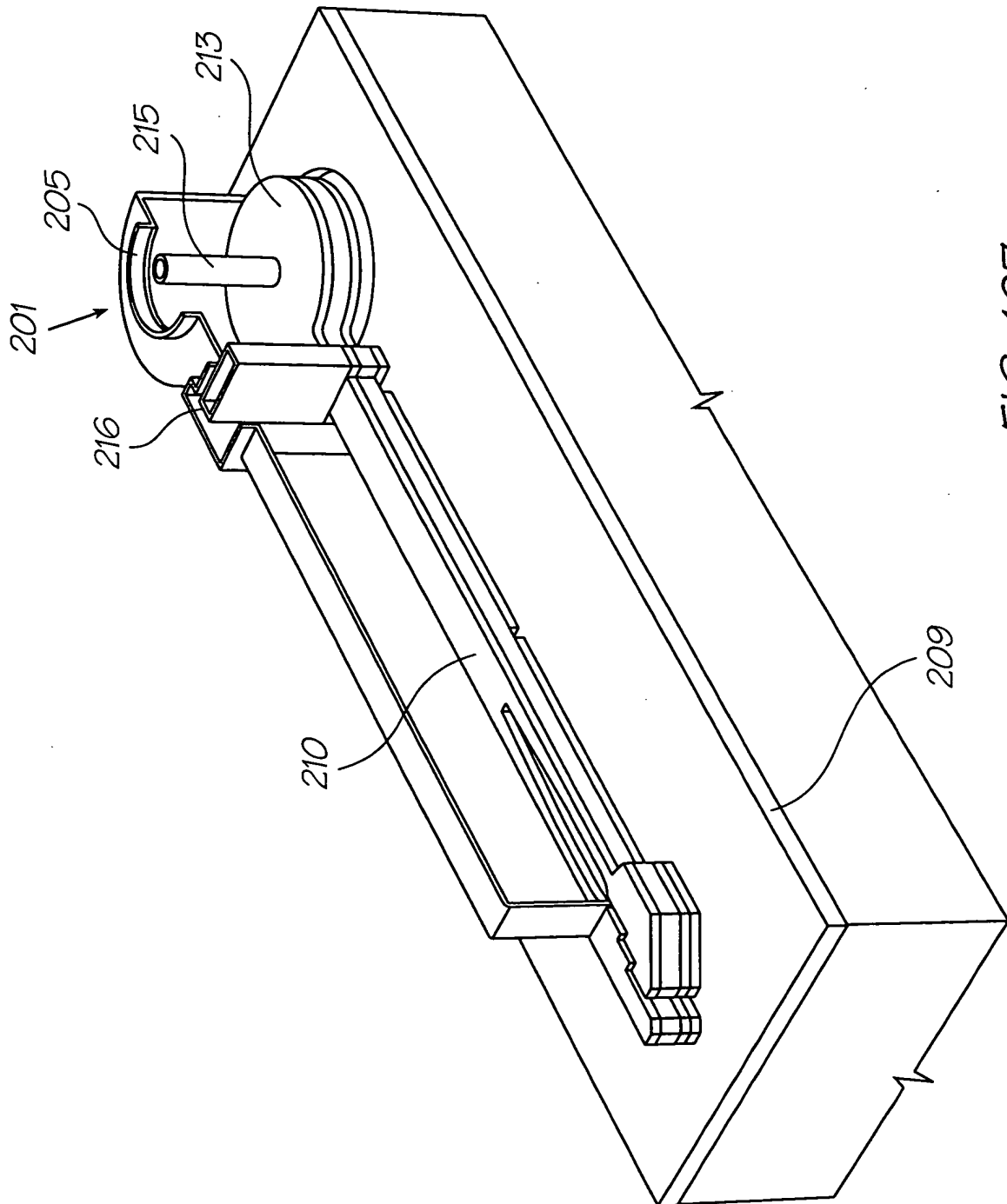


FIG. 107



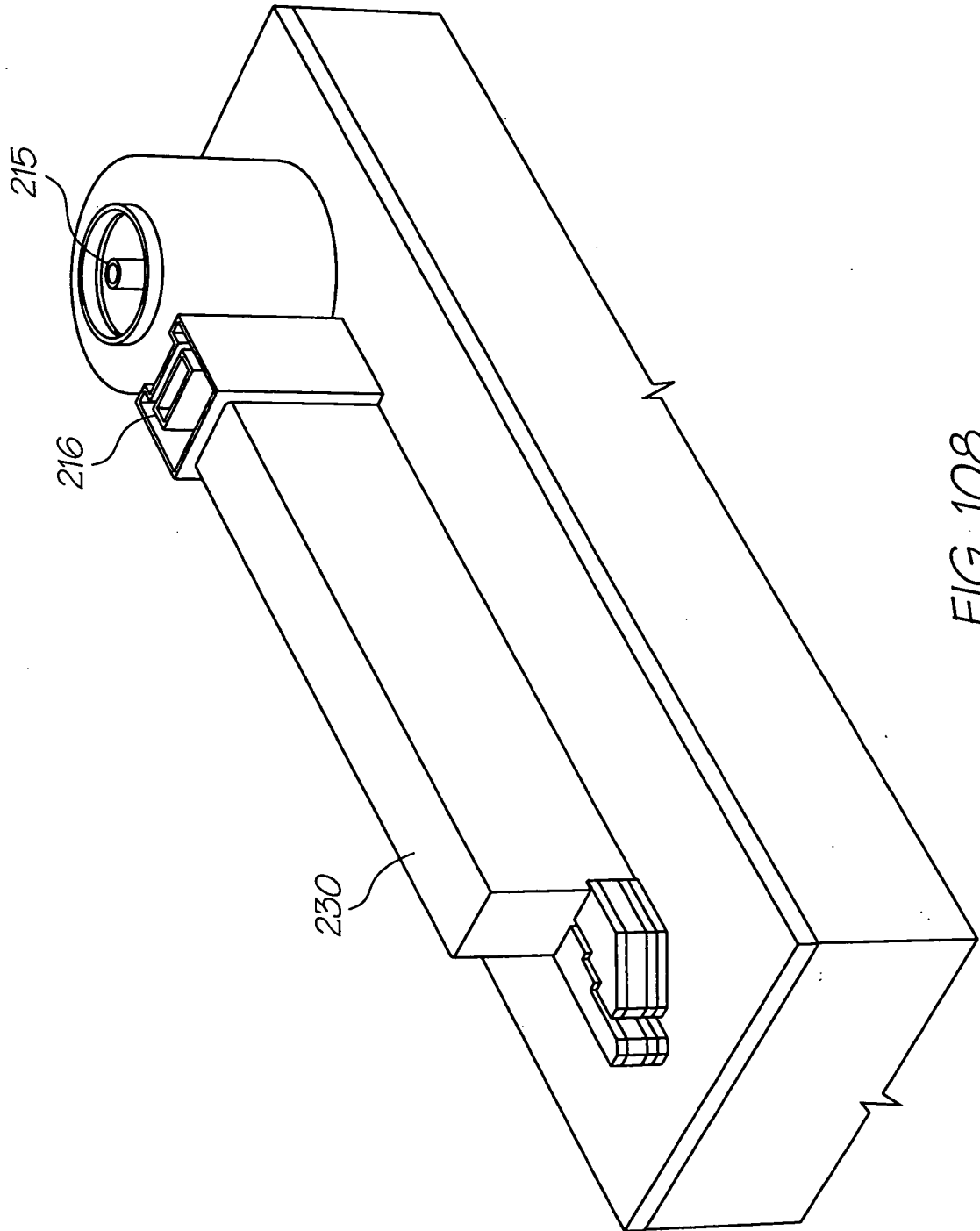


FIG. 108

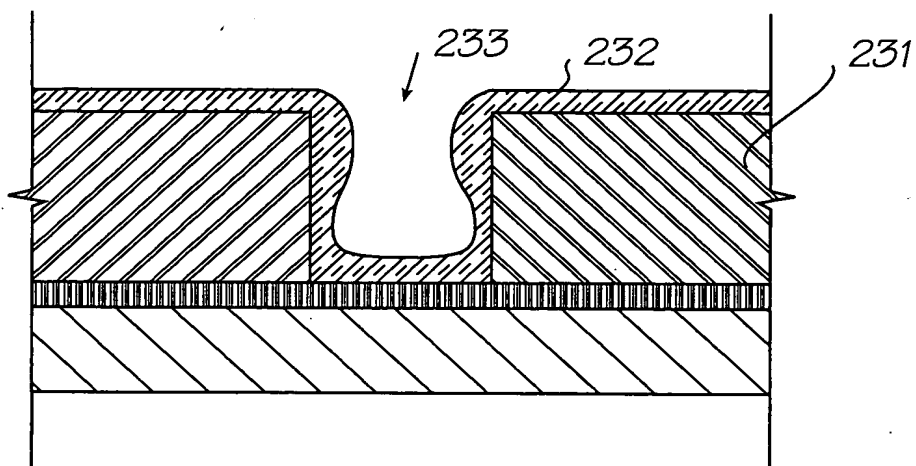


FIG. 109

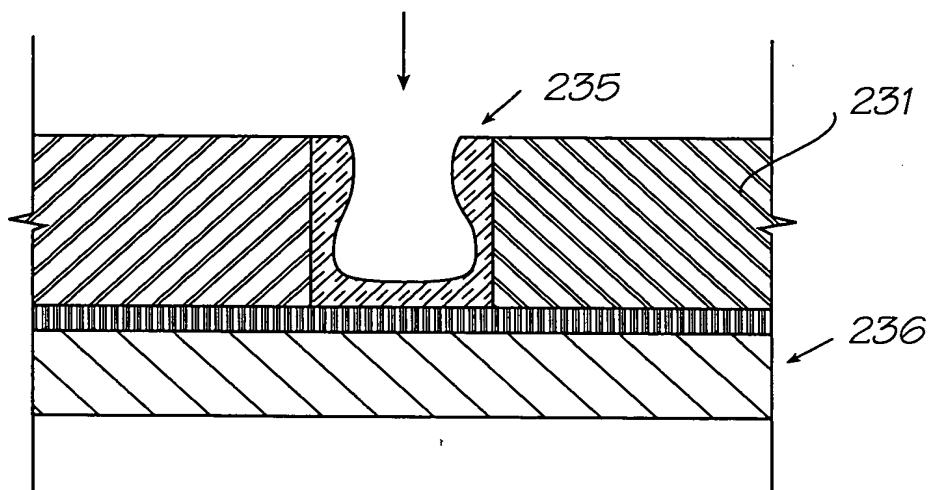


FIG. 110

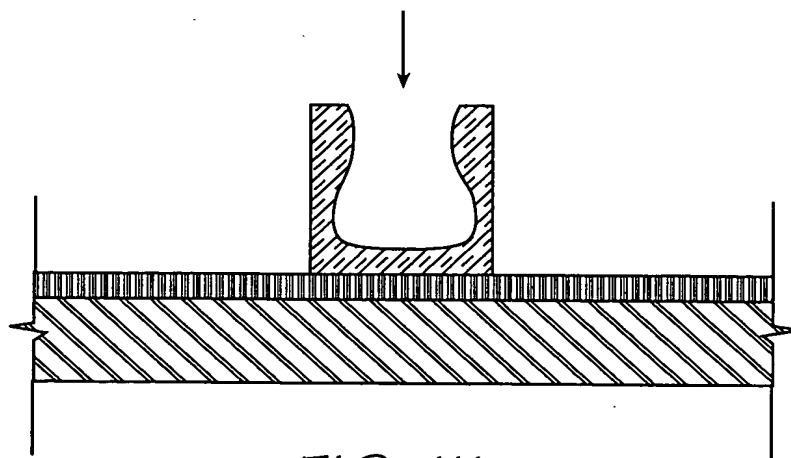


FIG. 111